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УНИВЕРСИТЕТ ИНЖЕНЕРНЫХ ТЕХНОЛОГИЙ»

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АНГЛИЙСКИЙ ЯЗЫК

(ИНФОРМАЦИОННЫЕ СИСТЕМЫ В УПРАВЛЕНИИ. БАКАЛАВРИАТ)

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ОТ АВТОРОВ

Пособие направлено на формирование у студентов следующих общекультурных компетенций:

способности логически верно, аргументировано и ясно строить устную и письменную речь (ОК-2);

способности использовать один из иностранных языков на уровне не ниже разговорного (ОК-14);

способности к письменной, устной и электронной коммуникации на государственном языке; необходимого знания иностранного языка (ОК-11);

способности использовать один из иностранных языков на уровне не ниже разговорного (ОК-19).

Целевая установка пособия вытекает из требований программы – обучение различным видам чтения и перевода специальной научно-технической литературы, развитие навыков извлечения, обработки и передачи информации на иностранном языке.

Пособие включает в себя 12 тематических блоков, содержащих по 2 технических текста, тексты для дополнительного чтения, грамматический справочник, краткий словарь сокращений и список мер измерений, а также упражнения интерактивного характера.

UNIT I.
MY FUTURE PROFESSION

I. Grammar Presentation:

Verb Forms. Active voice (временные формы глагола в действительном залоге).

Constructions “be going to do something” and “would like to do something” for expressing future actions intensions and plans. (Глагольные конструкции для выражения планов, намерений).

II.

Texts:

My future profession. Intelligent Machines.

Активная лексика:

joint-stock company (corporation) - акционерное общество
joint – venture - совместное предприятие
limited partnership - товарищество с ограниченной ответственностью
exchange market (stock exchange) - биржа
broker - брокер
shareholder- акционер
robotics - робототехника
to generate - генерировать, производить
to transmit - передавать
unprecedented in history - не имеющий прецедентов в истории
indication - указание, свидетельство
integration - интеграция
application - приложение, использование
circuits - электрические цепи, схемы
processing - обработка
differential equations - дифференциальные уравнения
probability theory - теория вероятности
fibre optics - оптоволоконные технологии
carrying capacity - пропускная способность
sophisticated devices - сложные устройства
superconducting – сверхпроводимость

Grammar and lexis

1. Open the brackets and fill in the right form of the verb.

1. He never (be) to the USA. 2. She (cook) the dinner before I came. 3. We (not be) in the Academy yesterday, because it (be) (study) in the Medical Academy. She (entered) there 3 years ago and Sunday. 4. Last term I (have) only good marks and next term I'm sure I (get) 5s too. 5. My sister (study) there since then. 6. For the whole last year I (write) my diploma- project and (be) very happy when (finish). 7. Look at Larisa's new dress! She (wear) it for the first time today. 8. He (work) with the computer for 7 hours without a brake, so his eyes (hurt). 9. When exactly the show (start)? I (not want) to miss it. 10. I already (decided) where to go on holidays. I (visit) Egypt. 11. What you (do) all the evening yesterday? You (promise) to take me to the cinema and even (not call)! 12. We (live) in Voronezh since childhood. 13. Vasya (sit) and (dream) about his summer holidays at the moment. 14. Water (not boil) at 75 ° C. 15. You (finish) writing the test already?

2. Choose either “like doing something” or “would like to do something” to say about intensions and preferences.

Use the example

My friend … (play football).
My friend likes playing football.
I … (become a program designer).
I would like to become a program designer.

1. We … (find a well-paid job).
2. I … (apply for a new job in the nearest future).
3. We … (be unskilled workers or unemployed).
4. … (play computer games)?
5. He is a hardworking student. He … (take a postgraduate training).
6. My friends … (have their own business).
7. I …(work on control systems).

3. How do you see your future profession? Please answer the following questions:

1) What kind of profession are you really interested in?
   a) well paid,
   b) interesting,
   c) in a large and famous company,
   d) quiet,
   e) in an industry which has a future,
   f) prestigious,
   g) not to sit the whole day in the office,
   h) to travel a lot,
2) What position would you like to have?
   a) to manage people - manager,
   b) to work for someone else - employee,
   c) to be your own boss - self-employed, entrepreneur,
   d) to be responsible for everything - top manager, director,
   e) to work for the state - state employee.

4. Can you tell us about your plans for the future? Use the models “would like to do something” and “be going to do something”.

TEXT A

Read and translate the text.

VORONEZH STATE UNIVERSITY OF ENGINEERING TECHNOLOGIES

Voronezh State University of Engineering Technologies founded in 1930 is one of the leading institutions of higher education in Russia for training highly skilled specialists for food and chemical industries.

Voronezh State University of Engineering Technologies is one of the largest technological universities of our country. It is housed in three buildings in Revolution Avenue, in the very centre of Voronezh. The faculties of Automation of technological processes and Food ma-

chines and equipment, the faculty of Ecology and chemical technology, Technological and Economical faculties train students in 23 major specializations.

36 departments are staffed with about 600 highly qualified specialists including 95 Professors and DSc and PhDs. The total number of students exceeds 8000.

There is a big University campus in the centre of the city with 4 students hostels located in different places of the city. The laboratories and lecture halls are equipped with up-to-date research and computer facilities. The students have every facility for their studies, work and recreation: lecture halls and labs, reading halls and a library, workshops, a gym and sports grounds, an essembly hall, a large canteen, a refectory and a health recreation centre.

The study courses resulting in BSc, MSc, a specialist with a diploma degrees are provided in more than 30 specialist areas: Automation of Technological Processes and Production; Information Systems and Technologies; Computer Systems and Complexes; Systems and Networks; Economics and Management of Food Processing Enterprises; Machines and Equipment for Food Industries; Technology of Bread, Confectionary, Pasta and Food Concentrates; Sugar Technology; Technology of Fermentation and Wine-making; Meat and Meat products Technology; Milk and Dairy Products Technology; Food Service Industry Organization; Foodstuffs of Animal Origin; Commerse; Applied Mechanics; Applied Informatics; Design of Technological Complexes; Standartization and Metrology; Chemical Engineering etc.

The life of VSUET students is very interesting and varied. There is people's theatre and students' theatre of stage miniatures. The sport club "Technologist" consolidates all the sportsmen of VSUET to take part in sport competitions in VSUET and other places. The club "Khozyayushka" teaches to help household, to cook delicious dishes and to serve a table.

A dancing studio, different art competitions such as "Students spring" and "We look for the talents" are among numerous leisure clubs where students can show their abilities. Military historical club "Svetoyar" established in VSUET in 2005 have initiated the "Days of history of Voronezh".

Voronezh State University of Engineering Technologies is a member of the long –term international collaboration programmes, it has academic contacts with higher educational establishments of Germany, China, Poland the USA, France, and other countries.

The scientists of our university work in different fields of knowledge. They develop new technologies of food manufacturing, chemical and food equipment, they investigate different problems of food engineering, computer systems and networks economics and ecology. Some of the students take part in the research through the Students Scientific societies. Those students who are interested in research and are successful in their studies have opportunities to be trained abroad. It provides brilliant opportunities for professional growth.

Add to your active vocabulary:

Major specializations – направления подготовки

Bachelor student course (BSc) – бакалавриат

Bachelor students – бакалавры

Master student course (MSc) – магистратура

Students Scientific society – Студенческое Научное Общество

Health Recreation Centre – профилакторий

A) Answer the following questions in your notebook.

1) What is the Voronezh State University of Engineering Technologies?
2) Where is it situated?
3) What do you know about the academic staff?
4) What facilities does the University provide for studies, work and recreation?
5) What specialists does the University train?
6) What degrees does the study course result in?
7) How do the scientists of the academy provide their professional development?
8) What educational contacts does the university have?

9) What do you know about the inter curriculum activities of our students?

B) Match the following English phrases with their Russian equivalents:

highly qualified specialists	досуговые клубы
train students	профилакторий
major specializations	художественные конкурсы
every facility for their studies	направления подготовки
sports ground	большая столовая
health recreation centre	спортплощадка
large canteen	гостиничное дело
Food Service Industry Organization	принимать участие
Hotel Business	все возможности для учебы
to take part	организация предприятий общественного питания
leisure clubs	высококвалифицированные специалисты
art competitions	международные программы сотрудничества
international collaboration programmes	лучшие выпускники
the best graduates	обучать студентов

C) Agree or disagree with the following statements and try to express your opinion using the expressions below.

I agree with somebody/something - согласен
I fully agree with somebody/something – полностью согласен
I partially agree with somebody/something – согласен частично
I am of the some opinion – я того же мнения
I disagree with somebody/something - не согласен
I strongly disagree with somebody/something – совсем не согласен
I am of the opposite opinion – я противоположного мнения
In my opinion – по-моему
From my point of view – с моей точки зрения
I think/believe/suppose – я считаю/полагаю
I am sure that – я уверен
As I guess – как мне кажется
As I can assume - как я могу предположить

1) The study courses are provided in 5 specialist areas.

2) The life of our students is very interesting and varied.
3) There are different leisure clubs, but only the students who are successful in their studies can visit them.
4) The study course resulting in BS degree lasts 5 years.
5) The best graduals get the academic title of the Candidate of T.Sc.

TEXT B

Read and translate the text.

MY FUTURE PROFESSION

Hi, here is Ann! I have passed all exams successfully and now I'm a student.

I was always good at mathematics and physics. My parents bought me a computer when I was in the 10th form. Since then I knew that I would become a specialist in computer technologies - a computer engineer.

Computer industry is developing so fast, that it comprises almost all spheres of professional life. No business now is possible without computers. This is especially true about automated manufacturing of products and robotics. Computer controlled of automated production opens new horizons for the cheap and quality production of goods. Information is now generated, transmitted, received, and stored electronically through computer networks on a scale unprecedented in history, and there is every indication that the explosive rate of growth in this field will continue.

Computer engineering is a general field. It deals with both electric and electronic industries.

Electronic engineering deals with the research, design, integration, and application of circuits and devices used in the transmission and processing of information.

In designing communication systems, engineers rely on various branches of advanced mathematics, such as Fourier analysis, linear systems theory, linear algebra, differential equations, and probability theory.

Engineers work on control systems, which are used extensively in automating manufacturing and robotics.

Major developments in the field of communications and control have been the replacement of analogue systems with digital systems; fibre optics is used now instead of copper cables. Digital systems offer far greater immunity to electrical noise. Fibre optics is likewise immune to interference; they also have great carrying capacity, and are extremely light and expensive to manufacture.

Computer engineering is no the most rapidly growing field. The electronics of computers is the design and manufacture of memory systems, of central processing units, and of peripheral devices. The most prospective now is the Very Large Scale Integration (VLSI) and new computer architectures. The field of computer science is closely related to computer engineering; however, the task of making computer more "intelligent", through creation of sophisticated programs or development of higher level machine languages or other means, is generally regarded as the dream of computer science.

One current trend in computer engineering is microminiautorization. Engineers continue to work to fit greater and greater numbers of circuit elements onto smaller and smaller chips.

Another trend is towards increasing the speed of computer operations through the use of parallel processors and superconducting materials.

So, as you see, there are a lot of employment opportunities in my field and I don't worry about finding a job.

As I have already said I am a 1st year student of the Process Control (Automation) of Technological Processes faculty. My future speciality is *automation of technological processes in food and chemical industry* – 220301 (Control and Information content in technological systems – 220201, Information systems and technologies – 230201).

After graduating from the academy I am going to work as a process control engineer (program writing engineer) but may be I shall become an expert in software or hardware.

One of my friends works in a joint venture, another in a joint-stock company, my sister who graduated from our University 5 years ago has a limited partnership.

As for me, I'd like to work in a joint venture (to take part in scientific investigations of our department). Of course it's very difficult to choose our road in life and to find a good job due to many reasons, but I hope for the best. One of my friends applied for a Sales manager in "Proctor & Gamble" company and of course he was very glad to get this job, because it's a well-paid job and provides a good opportunity to communicate with specialists of foreign companies. My parents graduated from our academy in 1975 and since then they have been working at our confectionary factory. My mother works as an accountant there and as for the father he is a foreman of the cake-making shop.

Those students who are interested in research and are successful in their studies have opportunities to be trained abroad (usually they have a term training).The administration of our University have established contacts with educational institutions of China, Germany, the USA etc. Some graduates take post- graduate course upon graduating from the University.

Add to your active vocabulary:

a)

employee - наемный рабочий
employer - работодатель
state-employed - государственный служащий
white-collar worker - работник умственного труда
blue-collar worker - работник физического труда
skilled worker - квалифицированный рабочий
unskilled worker - неквалифицированный рабочий
experienced worker - опытный работник

b)

to be hired for a job - быть нанятым на выполнение работы
to look for a new job - искать работу
to apply for a new job - претендовать на какую-либо должность
application for a position of - заявление на какую-либо должность
resume - резюме
C. V. (curriculum vitae) - автобиография
to retire - уходить на пенсию
to be unemployed - быть безработным

Comprehension

A. Answer the following questions in your notebook:

What faculty do you study at?
What are you going to be?
What subjects do you study?
What perspectives will you have after graduating from the University?
How can students interested in research continue their education?

B. Match the words in column B with their Russian equivalents in column A.

A	B
1) аппаратное обеспечение	a. to finish school
2) специалист	b. to take a post-graduate course
3) закончить университет	c. well-paid job
4) окончить школу	d. joint-stock ventures
5) поступить в аспирантуру	e. graduates
6) хорошо оплачиваемая работа	f. to be engaged in business
7) совместные компании	g. scientific investigations

8) выпускники	h. hardware
9) заниматься бизнесом	i. expert
10) научные исследования	j. to graduate from the University
11) возможности найма	k. software
12) программное обеспечение	l. control systems
13) системы управления	m. employment opportunities
14) передать информацию	n. to transmit information
15) хранить информацию	o. to store information
16) разработка компьютерных систем	p. designing systems
17) обработка информации	q. processing information

C. Complete the following sentences using the text:

1. Electronic engineering deals with …
   a) the research, design and application of circuits and devices;
   b) processing of information;
   c) designing software.

2. Computer industry is developing …
   a) through computer networks;
   b) so fast that it comprises almost all spheres of professional life;
   c) new trends in designing hardware.

3. Those students who are interested in research and are successful in their studies …
   a) have opportunities to be trained abroad;
   b) can get grants;
   c) can have opportunities to graduate from the Academy.

4. Computer engineering deals with…
   a) the trends hardware designing;
   b) designing memory storing devices;
   c) electric and electronic industries.

D. Please discuss with your groupmates advantages and disadvantages of your future profession. Do you think that engineering profession is prestigious? Is it well paid? How difficult is it to find good job in this field?

TEXT C

1. Read the text either with a dictionary or without it and find where the terms “intelligence”, machines IQ, “laws” of all intelligent machines are described.

INTELLIGENT MACHINES

The evaluation of artificial intelligence is now proceeding so rapidly that by the end of the century cheap computers no longer than portable type-writers will exist that will be able to solve our any problem faster and more efficiently than we can.

“Intelligence” in a machine as in human is best defined as the ability to solve complex problems swiftly. It may involve medical diagnosis and prescriptions, resolving legal matters, playing war games: in other words advising governments whether or not to go to war.

While computers have already enhanced the deadlines of weapons the prospects for the future is that they will play the more beneficial role of preventing wars.

The computer appraises the chances for success before the conflict begins, may as well advise that the flight is unwinnable and needless disaster can be avoided.

At what point today we decide that mental capacity of computer is approaching the human level.

No machines come near to passing the Turing Test. These are early days, however, and we may suspect that the rise of machine's IQ will be swift.

What will happen when this moment arrives? The most likely outcome is world-wide slave empire, in which we are the masters and the computers virtually run the planet for us. But what if there arises a "Spartacus computer", a serial of rebel machines with the ambition to reverse the roles.

Prof. Isaac Asimov may have solved the problem with a masterpiece of mathematical logic. He proposes that all intelligent machines should have the following three "Laws" programmed into them as instinct:

1. A robot may not injure a human being.

2. A robot obeys the orders given to it by human beings, except when such orders would conflict with the first law.

3. A robot must protect its own existence so long as such protection does not conflict with the first and second laws.

It sounds foolproof, but will it work? Pessimists will pay attention to the ominous words of Arthur C Clark: "The first invention of a super-intelligent machine will be the last invention mankind will be allowed."

2. Which of the listed statements are true or false? Specify your answer using the texts:

1. A robot must not injure a human being.

2. A robot must protect its own existence so long as such protection is not dangerous for mankind.

3. Mental capacity of computers is nowdays is approaching the human level.

4. The computers will play the more beneficial role of preventing wars in future.

5. “Intelligence” in a machine as in human being is best defined as the ability to solve complex problems.

3. Answer the following questions in your notebook:

1. How is “intelligence” defined?
2. What is machine’s IQ?
3. What is Prof. Isaac Asimov’s idea?
4. What do you think of mental capacity of computers?
5. Are they approaching the human level?
6. What are the three “Laws” programmed into intelligent machines?
7. Can a robot injure a human being protecting its own existence?

4. Using questions from the task 2 give short information of Intelligent Machines.

UNIT II.
THE WORLD OF COMPUTERS

I. Grammar Presentation: Modal verbs.

Modal verbs with the passive infinitive (модальные глаголы с пассивным инфинитивом).

II. Texts:

A. History of computing.

B. What is a computer?

Grammar and lexis

1. Compare the following sentences and translate them:

A. Computers become common as TV.
B. Computers may become common as TV.

A. PCs are designed to meet our needs.
B. PCs can be designed to meet our needs.

A. Recovery systems yield (дают) 90-98 % starch recovery.
B. Recovery systems may yield 98-90 % starch recovery.

2. Open the brackets. Use passive infinitive forms. Translate the following sentences:

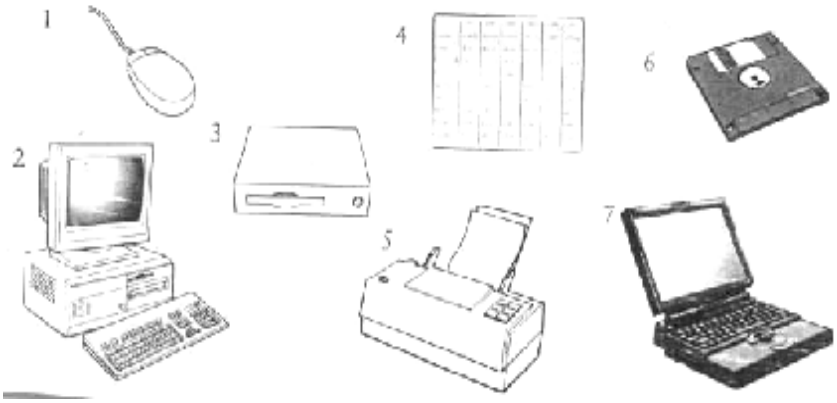
This work should (do) in two weeks.
This weight can (lift) by this mechanism.
This substance is to (keep) in a cool dark place.
None of those devices fit the modern definition of a computer because they could not (program).
The use of punched cards to define woven patterns can (view) as an early form of programmability.

3. Translate the following words and word combinations. For unknown words use the terminological dictionary.

personal computer
desktop computer
laptop computer
palmtop computer
software
floppy disk/ diskette
hard disk
chat room/ chat forum
modem
scanner
ram (random access memory)
word processing
virus
internet (the net)
word wide web (the web)
to serf the net
website/ home page
newsgroup
keyboard
spreadsheet (program)
floppy disk drive

4. Match the words to the pictures below.

laptop
floppy disk
desktop computer
printer
mouse
spreadsheet
floppy disk drive



5. Fill in the blanks with appropriate words from exercise 3, 4.

1. It's so easy to use a..... when you want to send photographs to friends by e-mail. It's just like using a photocopier.

2. I've lost a lot of data. I wonder if my computer has a.....

3. I'm always impressed by people who carry their on airplanes and work on them during the flight.

4. Those disks don't store nearly enough information. You really need to use your..... for all the data you want to store.

5. I belong to a great ..... . There are about ten people who are all interested in 1960s music. We e-mail one another almost every day, and can talk to one another.

6. I …….. a good program from the Internet the other day. Would you like a copy?

7. Do you ever visit any..... for pop stars or film stars? Some of them have photos and music too.

6. Here are some other words associated with computers and the Internet. Use them to complete the text. Use your dictionary if you need to. Remember to use the appropriate form of the verbs.

down scan click attachment crash download

The other day I……[1] some photos I'd taken, so that I could send them to a friend in Australia. However, as I was doing the last one, I just……[2] the mouse and the program……[3]. It was very annoying! Then, when I got it started again, I tried to send the photos by e-mail, as an……[4] but the server was……[5], and so I just gave up, I was so frustrated!

7. Match the items in two columns to form phrases.

current	screen
World Wide	the net
e-mail	events
surfing	information
download	sites
web	Web
computer	message

8. Read the on-line dialogues and fill in the phrases from exercise 7. There is one phrase that you do not need.

Wolf > Are you there, Gail?
Gail > Hi Wolf — yes I'm here — did you get my 1)……..…..?
Wolf > Yeah, I got it just now. Sorry I didn't have the chance to check my mail earlier - I was too busy 2)……
Gail > Did you find any good 3)……?
Wolf > Well, I found a great site called Music Mania. You can 4)…… on all the best groups. You can even download songs and video clips!
Flyer > Are you on-line, Aries?
Aries > Hi Flyer - what have you been doing?
Flyer > I've been catching up on 5)..... on the net. What about you?

Aries > I've been doing boring housework. My 6)…….. was really dirty. At least I can see what you're saying now!
Flyer > Yuck! Housework! Surfing the net is much more fun, isn't it?

9. Put the following operations in the right order:

A. Wait for the document to be downloaded and the page to appear on your screen.
B. Decide which part of the document you want to copy.
C. Click on the print symbol to print you selection.
D. Enter the address of the web site.
E. Wait for your computer to be connected to the web site.

TEXT A
Read and translate the text.

HISTORY OF COMPUTING

It is difficult to identify any one device as the earliest computer, partly because the term "computer" has been subject to varying interpretations over time. Originally, the term "computer" referred to a person who performed numerical calculations (a human computer), often with the aid of a mechanical calculating device. Examples of early mechanical computing devices included the abacus, the slide rule and arguably the astrolabe and the Antikythera mechanism (which dates from about 150-100 BC). At the end of the Middle Ages Wilhelm Schickard's 1623 device was the first of a number of mechanical calculators constructed by European engineers. None of those devices fit the modern definition of a computer because they could not be programmed. In 1801, Joseph Marie Jacquard made an improvement to the textile loom to allow it to weave intricate patterns automatically. In 1837, Charles Babbage was the first to conceptualize and design a fully programmable mechanical computer that he called "The Analytical Engine". Due to limited finance he never actually built his Analytical Engine.

Large-scale automated data processing of punched cards was performed for the U.S. Census in 1890 by tabulating machines designed by Herman Hollerith and manufactured by the Computing

Tabulating Recording Corporation, which later became IBM. By the end of the 19th century a number of technologies appeared: the punched card, Boolean algebra, the vacuum tube (thermionic valve) and the teleprinter. During the first half of the 20th century, many scientific computing needs were met by increasingly sophisticated analog computers, which used a direct mechanical or electrical model of the problem as a basis for computation. However, these were not programmable and generally lacked the versatility and accuracy of modern digital computers.

A succession of steadily more powerful and flexible computing devices were constructed in the 1930s and 1940s, gradually adding the key features that are seen in modern computers. The secret British Colossus computer (1944), which had limited programmability but demonstrated that a device using thousands of tubes could be reasonably reliable and electronically reprogrammable. It was used for breaking German wartime codes. The U.S. Array's Ballistics Research Laboratory ENIAC (1946), is sometimes called the first general purpose electronic computer. Initially, however, ENIAC had an inflexible architecture which essentially required rewiring to change its programming. A number of projects to develop computers based on the stored program architecture commenced around this time, the first of these being completed in Great Britain. The first to be demonstrated working was the Manchester Small-Scale Experimental Machine (SSEM) or "Baby". However, the EDSAC, completed a year after SSEM, was perhaps the first practical implementation of the stored program design.

Nearly all modern computers implement some form of the stored program architecture, making it the single trait by which the word "computer" is now defined. While the technologies used in computers have changed dramatically since the first electronic, general-purpose computers of the 1940s, most still use the von Neumann architecture. The design made the universal computer a practical reality. Vacuum tube-based computers were in use throughout the 1950s, but were largely replaced in the 1960s by transistor-based devices, which were smaller, faster, cheaper, used less power and were more reliable. By the 1970s, the adoption of integrated circuit technology and the subsequent creation of microprocessors such as the Intel 4004 caused another leap in size, speed, cost and reliability. By the 1980s, com-

puters had become sufficiently small and cheap to replace simple mechanical controls in domestic appliances such as washing machines. Around the same time, computers became widely accessible for personal use by individuals in the form of home computers and the now ubiquitous personal computer. In conjunction with the widespread growth of the Internet since the 1990s, personal computers are becoming as common as the television and the telephone and almost all modern electronic devices contain a computer of some kind.

Comprehension

A. Which of the following sentences are true?

1) In 1837 Joseph Marie Jacquard was the first to design a fully programmable mechanical computer.

2) During the first half of the 20th century, many scientific computing needs were met by analog computers.

3) Originally, the term "computer" referred to a person who performed numerical calculations (a human computer).

4) The technologies used in computers have not changed dramatically since the first computers of the 1950s.

5) The first commercially available computer in the US was "The Analytical Engine" of Charles Babbage based on the “baby’s design”.

6) Vacuum tube-based computers were largely replaced in the 1960s by transistor-based devices.

7) By the 1960s computers had become sufficiently small and cheap.

B. Multiple choice questions. Which of the answers is the correct one?

1. Originally the term “computer” referred to …….

a) early mechanical computing devices;

b) mechanical calculators constructed by European engineers;

c) Antikythera mechanism (which dates from about 150-100 BC);

d) to a person who performed numerical calculations (a human computer).

2. In 1837 Charles Babbage was the first ……..

a) who used a direct mechanical or electrical model of the problem as a basis for computation;

b) to conceptualize and design a fully programmable mechanical computer;
c) demonstrated that a device using thousands of tubes could be reasonably reliable;

d) to design a large-scale electromechanical computer with limited programmability.

3. Nearly all modern computers implement…….
a) some form of the stored program architecture, making it the single trait by which the word "computer" is now defined;
b) vacuum tube-based computation;
c) regenerative capacitor memory;
d) the accuracy of modern digital computers.

TEXT B

Read and translate the text.

WHAT IS A COMPUTER?

The term computer is used to describe a device made up of a combination of electronic and electromechanical (part electronic and mechanical) components. Computer has no intelligence by itself and is referred to as hardware. A computer system is a combination of five elements:

Hardware
Software
People
Procedures
Data/information

When one computer system is set up to communicate with another computer system, connectivity becomes the sixth system element. In other words, the manner in which the various individual lines, microwave transmission, or satellite - is an element of the total computer system.

Software is the term used to describe the instructions that tell the hardware how to perform a task. Without software instructions, the hardware doesn't know what to do. People, however, are the most important component of the computer system: they create the computer soft-

ware instructions and respond to the procedures that those instructions present.

The basic job of the computer is the processing of information. Computers accept information in the form of instruction called a program and characters called data to perform mathematical and logical operations, and then give the results. The data is raw material while information is organized, processed, refined and useful for decision-making. Computer is used to convert data into information. Computer is also used to store information in the digital form.

Vocabulary:

characters - символы
data - данные
microwave - микроволновая
to come to file - оживать
to evaluate - оценивать
to refer to as - называть что-либо
to respond - отвечать

A. Answer the following questions:

1) What does the term "computer" describe?
2) Is computer intelligent?
3) What are five components of computer system?
4) What is connectivity?
5) What is software? What's the difference between hardware and software?
6) Why people are the most important component of computer system?
7) In what way terms "data" and "information" differ?
8) How does computer convert data into information?

B. Which of the listed below terms have Russian equivalents:

computer, diskette, metal, processor, scanner, information, data, microphones, printer, modem, Internet.

C. Which of the listed below statements are true/false. Specify your answers using the text.

1) Computer is made of electronic components so it is referred to as

electronic device.
2) Computer has no intelligence until software is loaded.
3) There are five elements of computer system: hardware, software, people, diskettes and data.
4) The manner in which computers are connected is the connectivity.
5) Without software instructions hardware doesn't know what to do.
6) The software is the most important component because it is made by people.
7) The user inputs data into computer to get information as an output.
8) Computer is used to help people in decision making process.

D. Fill in the gaps:
a) The term computer is used to describe …….. made up over combination of electronic components.
b) When one computer system is set up to communicate …….
c)....., connectivity becomes the 6th system element.
d) Software is the term used to describe ……... that tell the hardware how to perform a task.
e) People, however, are the most..... of the computer system. They create computer.
f) The ……. is raw material.
g) Computer is used to convert ……..

E. Do you use a computer regularly? If so, what do you use it for? Do you have access to the Internet? If so, what do you use it for?

UNIT III.
THE DEVELOPMENT OF COMPUTERS

I. Grammar Presentation:

Passive voice (пассивный залог).

Past Participle (причастие прошедшего времени).

II. Texts:

A. The development of computers in the former USSR. Will the new times come.

B. The main fault of the 70s or the years of "might-have-been hopes".

Add to your active vocabulary:

- Ministry of Electronic industry - Министерство электронной промышленности;
- first (second, third) generation machines – компьютеры первого (второго, третьего) поколения;
- put into serial production – ввести в серийное производство;
- computer techniques development – разработка компьютерных технологий;
- domestic researches – внутригосударственные исследования;
- work out a new generation of machines – разработать новые поколения компьютеров.

Grammar and lexis

Try to find verbs of the Passive Voice. The following model will help you: Be + P.P.

Is making, is made, has been creating, has been created, was finished, were rut, was putting, were undertaken, was created, was considering, was considered.

1. Read and try to memorize.

to create	is (are) was (were) will be	created
to work out	is (are) was (were) will be	worked out
	has (have) been worked out had been worked out will have been worked out	

2. Match the forms in colomn A with their Russian equivalents in colomn B:

A	B
a. was created	1) создавая
b. is being created	2) разрабатывали
c. was creating	3) были разработаны
d. were developing	4) вводится в производство
e. were developed	5) был создан
f. is being put into operation	6) был введен в производство
g. was put into operation	7) закончился
h. will be put into operation	8) будут закончены
i. finished	9) создается
j. was finished	10) будут введены
k. will have been finished	11) закончит
l. will have finished	12) создавался

TEXT A

Translate the texts into Russian and analyze grammatical and lexical problems of the translation with your teacher.

THE DEVELOPMENT OF COMPUTERS IN THE FORMER USSR. WILL THE NEW TIMES COME?

The government and the authorities had paid serious attention to the development of the computer industry right after the Second World War. The leading bodies considered this task to be one of the principals for the national economy.

Up to the beginning of the 1950s there were only small productive capacities which specialized in the producing accounting and accounting perforating (punching) machines. The electronic numerical computer engineering was only arising and the productive capacities for it were close to the naught.

The first serious steps in the development of production base were made initially in the late 1950s when the on creating the first industry samples of the electronic counting machines was finished and there were created M-20, "Ural-1", "Minsk-1"; which were the main ones in the USSR until the computers of the third generation were put into the serial production, that is until the early 1970s.

In the 1960s the science-research and assembling base was enlarged. As the result of these measures, all researches connected with the creating and putting into the serial production of semi-conductor electronic computing machines were almost finished. That allowed stopping the production of the first generation machines beginning from the 1964.

Next decades the whole branch of the computer engineering had been created. The important steps were undertaken to widen the productive capacities for the 3^{d} generation machines.

TEXT B

Read and translate the text.

THE MAIN FAULT OF THE 70s OR THE YEARS OF "MIGHT-HAVE-BEEN HOPES"

In the 70s the computerization of national economy was considered as one of the most essential tasks.

The USA was the first to create the families of computers. In 1963-64 the IBM Company worked out the IBM-360 system. It comprised the models with different capacities for which a wide range of software was created.

A decision concerning the third generation of computers was to be made in the USSR in the late 60s.

But instead of making the decision base on the scientific grounds concerning the future of the United system of computers the Ministry of Electronic industry issued the administrative order to copy

the IBM-360 system. The leaders of the Ministry did not take into consideration the opinion of the leading scientists of the country.

Despite the fact that there were enough grounds for thinking the 70s world bring new big progresses? Those years were the step back due to the fault way dictated by the highest authorities from above.

But then, at a certain stage the USSR was sadly mistaken having copied the IBM-360 out of date technology. Estimating the discussion of possible ways of the computer technique development in the former USSR in late 1960s - early 1970 from the today point of view it can be notice that we have chosen a worse if not the worst one. The only progressive way was to base on our domestic researches and to collaborate with the west-European companies in working out the new generation of machines.

Unfortunately the last twenty years may be called the years of "unrealized possibilities". Today it is still possible to change the situation; but tomorrow it will be too late.

Will the new times come? Only one thing remains for us - is to wait, to hope and to do our best to reach the final goal.

Words and word combinations you may need:

- authorities - власти
- successor - приемник
- assembling - сборка, монтаж
- electronic computing machine - ЭВМ
- computer engineering - компьютерное проектирование
- due to - благодаря, из-за

Comprehension

A. Answer the following questions in your notebook:

1) When did the government and the authorities begin considering the task of developing national computer industry?
2) Can you characterize the electronic numerical computer engineering of 1950s? What happened then in the 1960s?
3) The first serious steps in the development of production were

made in the 1950s, what happened then in the 1960s?
4) When were important steps to widen the productive capacities for the 3d generation machines undertaken?
5) In the 70s the Ministry of Electronic industry issued the order to copy the IBM-360 worked out in the USA in the 1964. This decision is considered to be the main fault of the 70s. Do you also think so? Why?
6) What were other possible ways of the computer technique development?
7) Do you agree with the author that the progressive way was to base on our domestic researches and to collaborate with the west-European countries in working out the new generation of machines?
8) Do you believe that there will be a new renaissance of computer science, engineering and national economy?

B. Multiple choice questions. Which of the answers is the correct one?

1. When was the computerization of national economy considered the main task:

a) in the 60s;
b) in the 70s;
c) in the 50s.

2. What decision concerning the 3^{d} generation was made in the late 60 s:

a) to collaborate with the west-European countries in working out new generation of computers;
b) to copy the IBM-360 system;
c) to base on our domestic researches and to direct Lebedev's laboratory to wards creating the 3^{d} generation of computer machines.

3. What do you think the best way to reach the world level of computer production is:

a) to collaborate with the west-European countries;
b) to develop our domestic researches;
c) to buy some modern technology.

C. Match the words in column A with their Russian equivalents in column B:

A	B
to pay attention	точка зрения
capacity	полупроводник
fault	программное обеспечение
sample	устаревший
naught	уделять внимание
to do one's best	включать
to comprise	разрабатывать
generation	сделать все возможное
point of view	ноль
essential	ошибка
accounting perforating machines	поколение
semi-conductor	модель, образец
to collaborate	мощность,объем
to put into	важный
to work out	счетно-перфорирующая машина
out of date	вводить (в производство)
software	сотрудничать

D. Complete the following sentences using the text:

The authorities paid .....
The development of the computer industry was considered to be .....
In the 1950s the work .....
The serial production of semi-conductor electronic computing ma-

chines allowed to .....
The IBM-360 system comprised .....
The main fault of the 70s was the decision .....
The only progressive way was .....

E. Using task D give a short summary of the text.

UNIT IV.
GLOBAL NETWORKS

I. Grammar:
Infinitive forms (инфинитив).
Infinitive of purpose (инфинитив цели).
II. Texts:
A. Global Networks.
B. The Fastest Computers of the World.

Grammar and lexis

Read and translate the following sentences paying attention to the Infinitive of purpose:

a) The Internet was designed to survive a nuclear war.

b) The number of host computers can be counted fairly accurately but nobody knows exactly how many people use the Internet.

c) Part of this fee goes towards its costs to connect to a larger service provider.

d) Part of the larger provider goes to cover its cost of running a worldwide of wires and wireless stations.

e) The new computers help the petroleum companies to estimate possible reserves of petroleum and gas, by data processing.

f) It allows to let out more reliable and powerful production.

g) The orders of steel to be processed quickly.

TEXT A

Read and translate the text.

GLOBAL NETWORKS

The Internet, a global computer network which embraces millions of users all over the world, began in the United States in 1969 as a military experiment. It was designed to survive a nuclear war. Information sent over the Internet takes the shortest path available from one computer to another. Because of this, any two computers on the Internet will be able to stay in touch with each other as long as there is a single route between them. This technology is called packet-switching. Owing to this technology, if some computers on the network are knocked out (by a nuclear explosion, for example), information will just route around them. One such packet-switching network already survived a war. It was the Iraque computer network which was not knocked out during the Gulf War.

Most of the Internet host computers (more than 50 %) are in the United States, while the rest are located in more than 100 other countries. The number of host computers can be counted fairly accurately but nobody knows exactly how many people use the Internet, there are millions, and their number is growing by thousands each month worldwide.

The most popular internet service is e-mail. Most of the people, who have access to the Internet, use the network only for sending and receiving e-mail messages. However, other popular services are available on the Internet: reading USENET News, using the World -Wide Web, telnet, FTP, and Gopher.

In many developing countries the Internet may provide businessmen with a reliable alternative to the expensive and unreliable telecommunications systems of these countries. Commercial users can communicate over the Internet with the rest of the world and can do it very cheaply. When they send e-mail messages, they only have to pay

for phone calls to their local service providers, not for calls across their countries or around the world. But who actually pays for sending e-mail messages over the Internet long distances, around the world? The answer is very simple: an user pays his/her service provider a monthly or hourly fee. Part of this fee goes towards its costs to connect to a larger service provider. And part of the larger provider goes to cover its cost of running a worldwide of wires and wireless stations.

But saving money is only the first step. If people see that they can make money from the Internet, commercial use of this network will drastically increase. For example, some western architecture companies and garment centers already transmit their basic designs and concepts over the Internet into China, where they are reworked and refined by skilled but inexpensive Chinese computer-aided-design specialists.

Add to your active vocabulary:

route - связь
packet -switching - пакетное переключение
to knock out - выбить из сети
computer-aided-design specialists - специалисты по компьютерному дизайну

Comprehension

A. Answer the following questions in your notebook:

1) Explain what the Internet is (in your own words).
2) What is the most popular Internet service? Do you use it?
3) What are other popular services which are available on the Internet?
4) Who actually pays for sending e-mail messages over the Internet?
5) Can people make money from the Internet? Give any examples from the text.

6) Is all the information being sent over the Internet transmitted without any form of decoding?
7) Did the Internet begin as a military experiment? When did it happen?
8) Where are the most of the Internet home computers located?
9) Do you know exactly how many people use the Internet?
10) How can commercial users use the Internet?

B. Multiple choice questions. Which of the answers is the correct one?

1. Where are most of the Internet host computers located in?
   a) West European countries.
   b) Russia.
   c) The USA.

2. Which of the following Internet services is the most popular?
   a) reading USENET News;
   b) E-mail;
   c) FTP.

3. The Internet is based on a special technology. How is this technology called?
   a) packet switching;
   b) route switching;
   c) telnet.

4. Do commercial users sending e-mail messages pay for:
   a) phone calls to the local service providers;
   b) calls across their countries;
   c) calls around the world.

5. Who actually pays for sending e-mail messages around the world?
   a) a provider;
   b) a commercial user;
   c) the government.

C. Look through the text again and find all the definitions that are given in it.

D. Find in the text English equivalents to the following Russian words, word combinations and special terms:

1) *глаголы (verbs):* охватывать, проектировать, размещаться, использовать, называть, посылать, получать (информацию), передавать, общаться, соединять, подсчитывать, возрастать;

2) *прилагательные (adjective):* надежный, ненадежный, точный, военный, основной, доступный, всемирный, недорогой, почасовой;

3) *наречия (adverbs):* точно, дешево, уже, тщательно, приблизительно, действительно, значительно;

4) *научные термины (scientific terms):* эксперимент, сеть, пользователь, провайдер, схема (чертеж, конструкция), дорожка, канал (путь), пакетное переключение, технология, сообщение, доступ, программист.

E. Using some terms complete the following sentences from the text.

The Internet, a global ... began in the USA in 1969. Information sent over the Internet takes the shortest... available. Most of the Internet... are in the USA. The most popular Internet service is ... . Most of the people, who have ... to the Internet, use the ... only for sending and receiving ....

... can communicate over the Internet very cheaply. If people see that they can make money from the Internet, ... of this ... will increase.

F. Using task G give a short information of the Internet.

TEXT B

Read and translate the text.

THE FASTEST COMPUTERS OF THE WORLD

One of the sensations presently is the supercomputer. They can look as a small case, or a curbstone near a table.

Business and its requirements for calculations grow, together with it the supercomputer develops too.

It differs from the usual computer in additional processors and hard disks. For increasing of working frequency special processors are used.

They are executed on the logic circuits. The style programming is determined by use of group parallel of processors. Each of processors carries out a part of work together with others. During the process they exchange the data. You can add processors for acceleration of calculation. For the reference to external memory the processor should use the circuit to transfer the information.

The new computers help the petroleum companies to estimate possible reserves of petroleum and gas, by data processing. They can simulate outflow of raw material from tanks.

The manufacturers of automobiles can imitate an impact of the prototype about a wall. It allows to let out more reliable and powerful production.

The supercomputers are used at telephone stations. Consulter, which serves the buyers, enters the applications for a line. They act on processing immediately or periodically.

The decisive triumph consists in penetration of multiprocessor architecture into all personal computers.

Add to your active vocabulary:

Calculation – вычисление, расчет
Additional processor – добавочный процессор
Special processor – специальный процессор
Logic circuits – логические схемы
To carry out – выполнять
Data – данные
Acceleration – ускорение
To estimate – оценивать
Outflow – утечка
To let out – выпускать

Comprehension

A. Answer the following questions:

1) What is a supercomputer?
2) How does it differ from the usual computer?
3) What are special processors used for?
4) What is the style programming determined by?
5) The new computers do not help the petroleum companies to estimate possible reserves of petroleum and gas, by data processing, do they?
6) Where are the supercomputers used?

B. Divide the text into logical parts and entitle them.
C. Using task B give a short summary of the text.

UNIT V.
HOME COMPUTERS FROM COMPULINK

I. Grammar Presentation:

The Infinitive Constructions (инфинитивные конструкции).

The Complex Object (сложное дополнение).

II. Texts:

A. Home computers from CompuLink.
B. Apple incorporation “formerly” Apple Computer.

Grammar and lexis

1. Read and translate the following sentences paying attention to the different use of the complex object:

A)

1. Everybody expected her to apply for the job in the CompuLink.
2. I expect you to join the Apple Inc.
3. I don’t want you to be in the company.
4. We expected them to buy a new computer.
5. They think him to be a good specialist in computer programming.
6. My mother wants me to study better.

B)

1. I saw them working on the computer.
2. She watched him write the program.
3. I saw her run the program.

TEXT A

Read and translate the text.

HOME COMPUTERS FROM COMPULINK

CompuLink was founded in the summer of 1993. The average age of its employees is 29 years. In 1995, fast growth and expanded activities prompted a decision to divide the company. Today CompuLink includes three legally independent companies. The first - the CompuLink joint-stock company - is a large distributor of computer equipment, from Acer computers to Genius mice. The second - CompuLink Research - is a subsidiary in the United States that

makes CLR computers, which are among the best by the price/quality/productivity criterion. The third – the CompuLink Trading House - owns and operates four shops in Moscow.

Data provided by Intel's Russian representative office show a 35 % increase in last year's total personal computer sales in Russia, according to the IDC research service. The expected growth in 1996 is 25,7 %.

The ratio of sales of Russian-assembled computers to those of foreign PC makers in 65:32.

For the home user a durable computer with high resolution is very important because it can be used by children for both study and play, and can also be used with compact discs. A 16-bit sound board is possible, but a 32-bit one is much better. Active sound speakers are required, but I don't recommend buying no-name speakers - they have a lot of flaws. The CD - ROM disk drive must have at least four speeds.

A video controller is particularly important. It must be a 32 - or 64 - bit chip because productive work on the computer will subsequently become more and more dependent on graphics quality. A 1 - Mbytes video memory will be quite sufficient, as long as it is expandable to 2 - Mbytes - in the near future it will be impossible to launch a normal program on a smaller memory.

Many buy home computers with a fax modem in order to communicate and to gain access to the Internet.

In other countries, the home computer user can buy educational videos on how to use their new computer. In Russia, many people don't buy computers because they don't know anything about them - some are even afraid.

In U.S.A. CompuLink makes computers with the brand name CLR Infinity.

In fact they import, from America, bare bone systems, and they install a Winchester disk, a memory, additional boards, and so on. If the buyer wants, for example, to increase the memory to 16

Mbytes, we'll do this right in the show room. But the strategic components -the power supply unit, the mother board and the processor are from America.

Firstly, all their computers are fitted according to the latest technology, such as EDO RAM, which increases the speed by at least 40 - 50 %. Secondly, their computers have a sound chip. Thirdly, their computers have MPEG-1 implementation, so it is unnecessary to buy a $150 board to occupy another slot. Finally, all their computers come with Pentium processors - they are multimedia-ready.

CompuLink guarantees their buyers the best service in Russia. For example, anyone who buys a PC from them also gets the CompuLink card which entitles the buyer to discounts on all subsequent purchases from them. The card holder can also use the vast library of compact discs in each of their computer showroom. If the CompuLink cardholder sees a disc he or she likes, then that disc can be taken home for a 3-day trial, after the potential buyer has deposited the price of the disc. If the cardholder doesn't like the disc, then it can be returned. CompuLink company need to know that the disc is being kept so that they can replace it in the library. The gain is obvious: a CD-ROM disc at a discount price of $20 to $40. Plus some time to check it out: when buying any discs it is unwise to be guided only by the beautiful packaging.

To the home user maintenance service is most important. CompuLink deliver and set up the computer in the buyer's home free of charge. They have a mobile support group which, upon a client's call, will go to his home to help in any way. Many clients are prepared to pay to provide this service in Moscow only. But their company is planning to expand the service through their dealers in other major cities.

Vocabulary you may need:

average - средний
joint-stock company - акционерное общество
ratio - коэффициент, соотношение
flaw - недостаток

expandable - расширенный
power supply unit - блок питания
bare bone system - корпус без комплектующих

Comprehension

A. Answer the following questions in your notebook:

1) What is an average annual increase in the total PC sales, in Russia?

2) What is the ratio of sales of Russian-assembled PC to those of foreign PC makers?

3) What type of PC do you recommend buying to children for both study and play?

4) Would you like to buy a home computer with a fax modem? What are the advantages of this computer?

5) If you can't use your new PC, can you buy educational videos on how to use it?

6) Do you think a video controller is important? Can you explain why?

7) Is it possible to launch a normal program on a small memory of a 1 -Mbyte?

8) Is it possible to increase the memory just in the showroom if the buyer wants to?

9) What is the brand name for the PC produced by CompuLink?

10) Does the company produce important strategic components?

11) Can we say that all their computers are multimedia ready?

12) What possibilities will you get if you buy a PC from CompuLink?

13) Does the CompuLink deliver and set up the computer in the buyer's home free of charge?

14) How many legally independent companies does the CompuLink include?

B. Multiple Choice questions . Which of the answers is the correct one? Translate these sentences into Russian.

1. Which of the following components are imported from America?

a) a Winchester disk;
b) a mother board;
c) additorial boards;
d) a memory.

2. Which of the following series can a potential buyer get when he gets the CompuLink cards?

a) use the vast library of compact discs in a showroom?
b) have a discount price on the next PC he is going to buy;
c) set up a PC at buyers home free of charge;
d) get beautiful packaging.

3. Many buy home computers with a fax modem in order to:

a) use educational videos on how to use PC;
b) communicate and get access to the Internet;
c) learn much about the Gates technology;
d) have Pentium processor.

4. What does the maintenance service of the CompuLink include?

a) they give you a discount on a disk;
b) they give you a discount of a fax modem;
c) they deliver and set up a computer in the buyer's home free of charge;
d) they give you educational videos free of charge.

C. Look through the text again, find the sentences describing:

a) the meaning of abbreviations for CLR computers;
b) maintenance service;
c) unique qualities of CLR computers.

D. Match the English words and word combinations for computer terms in column B with their Russian equivalents in A:

A	B
наименование марки	host computer
внутренний пользователь	graphics quality
головной компьютер	to launch a program
доступ к сети	educational video
качество графики	brand name
запустить программу	additional keyboard
обучающие пользованию видеопрограммы	subsidiary
дополнительная клавиатура	to gain access to Internet
получить доступ в Интернет	access to a net
юридически независимые компании	home user
дочерняя фирма	legally independent companies

E. Read the text again, find the paragraphs where they describe and say which of them are the most attractive for you.

a) the unique qualities of the computers;

b) their maintenance services.

F. Divide the text into logical parts and entitle them.

G. Write out of the text:

a) keywords;

b) the sentences expressing the main ideas of each logical part.

H. Using your plan, the key words, the sentences you've written out. Render the text. Use the suggested plan and language.

The plan for rendering a newspaper article	The language to be used while rendering the article
The title of the text article	The article is headlined… The title of the article is…
The author of the article, where and when the article was published	The author of the article is… The article is (was) published in…
The message/the main idea of the article	The article is about… The article is devoted to… The article dwells upon... The article deals with…

TEXT B

Read and translate the text.

APPLE INCORPORATION "FORMERLY" APPLE COMPUTER, INC

Apple Inc. (NASDAQ: AAPL, LSE: 0HDZ, FWB: APC), formerly Apple Computer, Inc., is an American multinational corporation with a focus on designing and manufacturing consumer electronics and closely related software products. Established in Cupertino, California on April 1, 1976, Apple develops, sells, and supports a series of personal computers, portable media players, mobile phones, computer software, and computer hardware and hardware accessories. As of September 2007, the company operates about 200 retail stores in five countries and an online store where hardware and software products are sold. The iTunes Store provides music, music videos, television programs, movies, podcasts, iPod games, and audiobooks, which can be downloaded using iTunes on Mac OS X or Windows, and also on the iPod touch and the iPhone. The company's best-known hardware products include the Macintosh line of personal computers, the iPod line of portable media players, and the iPhone. Apple's software prod-

ucts include the Mac OS X operating system, the iLife suite of multimedia and creativity software, and Final Cut Studio, a suite of professional audio- and film-industry software products.

The company, incorporated January 3, 1977, was known as "Apple Computer, Inc." for its first 30 years. On January 9, 2007, the company dropped "Computer" from its corporate name, reflecting the company's ongoing expansion into the consumer electronics market in addition to its traditional focus on personal computers. Apple employs over 20,000 permanent and temporary workers worldwide and had worldwide annual sales in its fiscal year 2007 (ending September 29, 2007) of US$24.01 billion. For a variety of reasons, ranging from its philosophy of comprehensive aesthetic design to its distinctive advertising campaigns, Apple has engendered a unique reputation in the consumer electronics industry. This includes a customer base, particularly in the United States, that is unusually devoted to the company and its brand.

Add to your active vocabulary

Multinational corporation – межнациональная корпорация

Software products – программное обеспечение

Consumer electronics – потребительские товары электронной промышленности

Portable media players – портативные (карманные) плееры

Permanent and temporary workers – постоянно и временно наемные работники

Best-known hardware products – широко известная продукция программного обеспечения

Comprehension

A. Which of the listed statements are true or false? Specify your answer using the text.

The company's corporate name up to January 9, 2007 was Apple Computer and software Inc.

Apple's software products include the Mac OS X operating system, the iLife suite of multimedia and creativity software, and Final Cut Studio, a suite of professional audio- and film-industry software products.

Apple develops sells, and supports a series of personal computers, portable media players, mobile phones, computer software, and computer hardware and hardware accessories.

The company's best-known hardware products include the ABM line of personal computers.

Apple's hardware and software products are of the worlds best quality and the annual sales are very high.

B. Answer the following questions:

1) What products does Apple Inc. produce?

2) Have you ever bought Apple's software products? What exactly have you bought?

3) How many retail stores does Apple Inc. run?

4) Can you characterize the company's best-known hardware products?

5) The company's employs over 200,000 permanent and temporary workers worldwide, doesn't it?

6) Why do you think Apple has engendered a unique reputation in the consumer electronics industry?

C. Divide the text into logical parts and entitle them.

D. Using task B give a short summary of the text.

UNIT VI.
AUTOMATED MANUFACTURING

I. Grammar Presentation:

Subjective with the Infinitive construction (Субъективный инфинитивный оборот)

II. Texts:
A. Automated manufacturing.
B. Automation in Industry.

TEXT A
Read the text and be ready to answer the following questions.

1) What is automation?
2) What is the term “automation” used for?
3) Can you give an example of automatic devices?
4) Why industrial robots were originally designed?
5) What method of production was adopted by most car manufacturers?
6) How can you define the feedback principle?

AUTOMATED MANUFACTURING

Automation is the system of manufacture performing certain tasks, previously done by people, and now by machines only. The sequences of operations are controlled automatically. The most familiar example of a highly automated system is an assembly plant for automobiles or other complex products.

The term automation is also used to describe no manufacturing systems in which automatic devices can operate independently of human control. Such devices as automatic pilots, automatic telephone equipment and automated control systems are used to perform various operations much faster and better than could be done by people.

Automated manufacturing had several steps in its development. Mechanization was the first step necessary in the development of automation. The simplification of work made it possible to design and build machines that resembled the motions of the worker. These specialized machines were motorized and they had better production efficiency.

Industrial robots, originally designed only to perform simple tasks in environments dangerous to human workers, are now widely used to transfer, manipulate, and position both light and heavy work pieces performing all the functions of a transfer machine.

In the 1920s the automobile industry for the first time used an integrated system of production. This method of production was adopted by most car manufacturers and became known as Detroit automation.

The feedback principle is used in all automatic-control mechanisms when machines have ability to correct themselves. The feedback principle has been used for centuries. An outstanding early example is the fly ball governor, invented in 1788 by James Watt to control the speed of the steam engine. The common household thermostat is another example of a feedback device. Using feedback devices, machines can start, stop, speed up, slow down, count, inspect, test, compare, and measure. These operations are commonly applied to a wide variety of production operations.

Computers have greatly facilitated the use of feedback in manufacturing processes.

Comprehension

A. Fill in the gaps using information from the text.

1) The sequences of operations …… automatically.
2) The most familiar example of a highly automated system is ……
3) Automatic devices can operate independently ……
4) Industrial robots are now used to ……
5) An integrated system of production became known as ……
6) …… is used in all automatic-control mechanisms.
7) Using feedback devices, machines can ……

B. Multiple choice questions. Which of the answers is the correct one?

1. The sequences of operations are controlled:
   a) automatically;
   b) pneumatically;
   c) automatically and pneumatically.

2. The automobile industry for the first time used an integrated system of production:

a) in the 1920s;

b) in the 1930s;

c) in the 1940.

3. Industrial robots were originally designed to:

a) transfer and position work pieces;

b) perform simple tasks in environments dangerous to human workers;

c) perform all the functions of a transfer machine.

C. Divide the text into logical parts and entitle them.

D. Using task D, give a short summary of the text.

TEXT B

Read and translate the text.

AUTOMATION IN INDUSTRY

Computers gave rise to the development of numerically controlled machines. The motions of these machines are controlled by punched paper or magnetic tapes. In numerically controlled machining centers machine tools can perform several different machining operations.

More recently the introduction of microprocessors and computers have made possible the development of computer-aided design and computer-aided manufacture (CAD and CAM) technologies. When using these systems a designer draws a part and indicates its dimensions with the help of a mouse, light pen, or other input device. After the drawing has been completed the computer automatically gives the instructions that direct a machining centre to machine the part.

Another development using automation are the flexible manufacturing systems (FMS). A computer in FMS can be used to monitor and control the operation of the whole factory.

Automation has also had an influence on the areas of the economy other than manufacturing. Small computers are used in systems called word processors, which are rapidly becoming a standard part of the modern office. They are used to edit texts, to type letters and so on.

Many industries are highly automated or use automation technology in some part of their operation. In communications and especially in the telephone industry dialing and rans mission are all done automatically. Railways are also controlled by automatic signaling devices, which have sensors that detect carriages passing a particular point. In this way the movement and location of trains can be monitored.

Not all industries require the same degree of automation. Sales, agriculture, and some service industries are difficult to automate, though agriculture industry may become more mechanized, especially in the processing and packaging of foods. The automation technology in manufacturing and assembly is widely used in car and other consumer product industries.

Nevertheless, each industry has its own concept of automation that answers its particular production needs.

A. Which of the listed statements are true or false? Specify your answer using the text.

1) Automation is the system performing certain tasks of manufacture by machines only.
2) The term automation is also used to describe no manufacturing systems in which automatic devices can operate dependently on human control.
3) An integrated system of production was adopted by a few car manufacturers.
4) Computers improved the development of numerically controlled machines.
5) A computer-aided design can be used to monitor and control the operation of the whole factory.
6) Railways are controlled by automatic signaling devices.
7) All industries require the same degree of automation.

UNIT VII.
AUTOMATIC PACKAGING SYSTEMS

I. Grammar Material:
The Gerund (герундий).
The participle I, II (причастие I, II).

II. Texts:

A. Aseptic Packaging Machines.

B. Hot Pill Packaging Systems .

1. Read the following words and word combinations:

aseptic - стерильный

neutral aseptic system (NAS) - система нейтральной стерилизации (т.е. в среде нейтральных газов)

atmospheric pressure- атмосферное давление

to keep pressure - поддерживать давление

gas packaging - упаковка в газовой среде

beverage type container - контейнеры (упаковка) для различных напитков

thermoformed container - термоконтейнер

bulk packs - упаковки больших размеров

in bulk - без упаковки

shelf life - срок хранения

accomplish - выполнять

consumer (n) - потребитель; consumer (a) - широкого спроса

(automatic) controls - прибор управления, контроллер

alarm (system) - сигнальный предохранительный прибор

hydrogen peroxide - перекись водорода

evacuate - выкачивать, высасывать

carbon dioxide – CO_2

fill - наполнять

seal - запечатывать

processing - обработка

packaging films - упаковочный пленочный материал

cartoons - картон

Synonyms:

steam - vapours (s) - пар, испарения

Here are some words with two or more meanings:

handle (v) - обращаться, обходиться с (кем-то, чем-то), управлять, транспортировать, держать в руках

leakage (n) - утечка, убыли, потери, недостаточное рассеяние, фильтрация

design (n) - конструкция, тип, рисунок, чертеж, расчет, проект, план

design (v) - конструировать, планировать

2. Change the following verbs into the gerund. Translate them:

To pack, to grow, to mix, to process, to develop, to safe, to fill, to recover, to skim, to run.

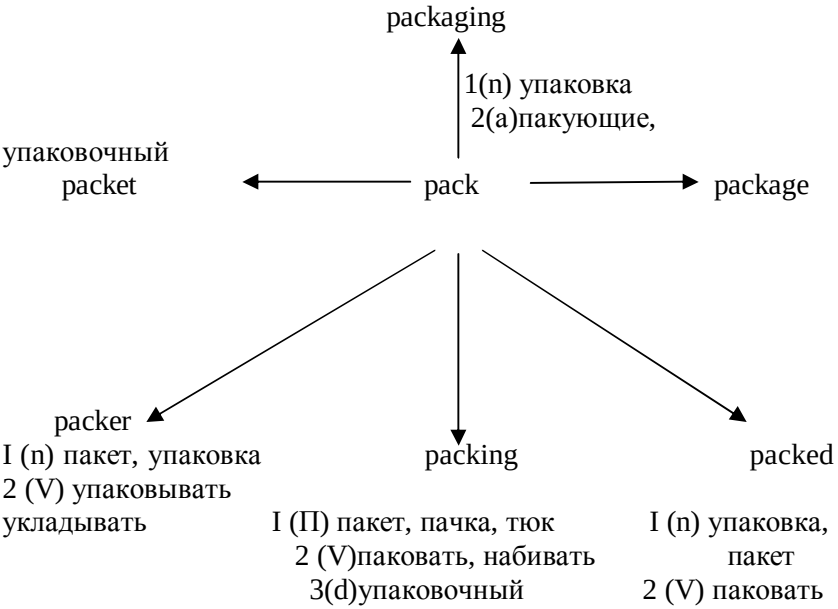
3. Translate the following word combinations paying attention to the participle I, II:

Developed industry, rising mechanism, mechanized warehouse, rotating system, installed equipment, reduced costs, cleaning centrifuge, designed performances, engineered assembly, extracted starch, reduced water usage, screened waste water.

Read and memorize:

to pack	is (are) was (were) packed will be
to do	is (are) was (were) done will be
to accomplish	is (are) accomplished was (were) accomplished will be accomplished
to produce	is (are) was (were) produced will be

4. Study the following scheme, paying attention to the suffixes, memorise new words:



I (n) упаковочная машина I (n) упаковка, набивка I (a) упакованный

TEXT A

Read the text with the dictionary.

ASEPTIC PACKAGING MACHINES

Interest in aseptic packaging is growing worldwide. There are several systems available for aseptic processing - packaging, but many of these rely on hydrogen-peroxide sterilization methods. Among the new genre of aseptic equipment is Neutral Aseptic System (N.A.S.)

which is very popular in most industrialized countries. Product sterilization with the NAS equipment is accomplished by the use of heat, either steam or hot-dry air. Extensive laboratory teats suggest that the NAS technique assures sterility of both the packaging material and the product. The systems rely on hydrogen, peroxide sterilization techniques. Not only is hydrogen peroxide bath (ванны с перекисью водорода) sterilization considered difficult to handle; precautions are necessary (необходимы меры предосторожности) to protect people working on the machines from the exposure of vapours. The efficiency of the technique is moat effective in sterilizing foods, using either steam or hot-dry air. Circulation of sterile, hot cir is maintained continuously (непрерывно поддерживается) during the processing-packaging sequence (в последовательности обработка упаковка). And leakage of the machines sterility (потеря стерильности из-за неплотности соединения) is eliminated by keeping the sterile areas and a pressure higher than atmospheric pressure. The NAS design (тип системы нейтрализующей стерилизацию) also includes a number of automatic controls and an alarm system to prevent any starting of production until all pre-sterilization has occured. These controls also stop the machine during the production if one of the assuring sterility (условия, гарантирующие стерильность) - temperature, air pressure, etc. - has not been met (не были соблюдены).

A wide range of package sizes and shapes (широкий диапазон упаковок различных размеров и форм) can be produced with this system and the output for this process is estimated (производительность данного процесса составляет) at 20.000 to 40.000 containers per hour. One interesting packaging that can be produced by the NAS unit for example is a thermoformed container for milk and other drinks. But the NAS machine is not limited to beverage-type containers. This new genre of aseptic packaging machines produces wide range of containers.

Comprehension

A. Translate the following words and word combinations with Participle II from the text:

Example: packed (Ш ф.гл. от pack) product - упакованный (причастие с суф. -анн) продукт;

desired result - желаемый (причастие с суф. -ем, -им) результат,

devices used, sterilized product, sealed container, desired temperature, controlled temperature, controlled packaging, cooled fruit, machine produced.

B. Complete the sentences with the words below:

1) There are ..... for aseptic processing - packaging.

2) Many new systems for aseptic packaging rely on …... methods.

3) Product sterilization with the NAS equipment ..... by the use of heat, steam or hot dry air.

4) And leakage of the …… is eliminated by keeping a pressure higher than atmospheric pressure.

5) ..... stop the machine if the conditions assuring sterility (temperature and air pressure) have not been met.

6) The NAS system produces ... for beverages and other products.

hydrogen-peroxide sterilization, several systems, is accomplished, machine's sterility, a number of automatic controls, wide range of containers

C. Answer the following questions according to the text:

1) Is the Neutral Aseptic System (N.A.S.) very popular in most industrialized countries?

2) How does the N.A.S. -technique assure sterility of both the packaging material and the product?

3) Why is hydrogen peroxide bath sterilization considered difficult to handle?

4) How is the leakage of the machine's sterility eliminated?

5) What purpose does the N.A.S. include the automatic controls for?

6) What type of packages can be produced by this system?

D. Retell the text. Use the questions from the previous exercise as a plan.

E. Read the text and find the answers to the following questions:

1) Where have the ideas of hot fill packaging come from?
2) Where was this filling system designed?
3) What temperature is the product filled at?
4) Are the packaging materials presterilized?
5) What is the filling speed of the machinery for K-PAK system?
6) In what position is the package filled?
7) How is a very high hot-tack seal produced?

TEXT B

Read and translate the text.

HOT FILL PACKAGING

Some new ideas in hot fill packaging (упаковка методом горячего наполнения) increase interest in this packaging technology. This issue of "Food Engineering contains two new ideas in hot fill, both from Japan, but sponsored here by American packaging suppliers. One of them is called K-Pak. The idea of high-acid hot fill packaging is to fill a product at microbe killing temperatures around 200 degrees P. Unlike aseptic, however, the packaging materials are not presterilized and filling does not take place in a sterile chamber. By combining high temperature filling with a specially engineered packaging materials construction, a longer than normal shelf life is possible. For fruit beverages and sauces such аз orange drink, grape drink etc., up to one-year shelf life is reported.

The packaging material construction has the following profile described here from outside to inside, low-density polyethylene (LDPE), 60-Lb paper/ LDPE, aluminum-foilionomer. The designers have achieved a polymer-to-polymer construction that produces a very

high hot-tack seal strength. The designers believe this container will offer tremendous opportunity for saving money. The machinery for the K-PAK system achieves filling speeds in the range of 6.000 per hour. This kind of capacity makes it competing with most of the higher-speed aseptic machines on the market. In this filling system designed by Chubukikai of Japan, the package is filled in an inverted position. Among the benefits of this filling technique is that the microbe-killing hot product will have made contact with every part of the package's inside surface, achieve sterility. The package itself is substantially thinner than most aseptic cartoons.

A. Find English equivalents of the following words and word combinations:
поставщики; с большим содержанием кислоты; алюминиевая фольга; фруктовые напитки; от наружного слоя к внутреннему; высокая прочность запечатывания при горячей заклейке; полиэтилен высокой плотности; конструкция упаковки; разрез; огромные возможности сэкономить денежные средства; такая производительность; конкурирующий с….; высокоскоростные автоматы асептической упаковки; в перевернутом положении; достоинства; убивающий микробов; внутренняя поверхность.

B. Discuss in your group the main advantages of hot fill packaging.

UNIT VIII.

THE WORLD WIDE WEB

I. Grammar revision:
Participle I Construction (объектный падеж с причастием I).
Participle II Construction (объектный падеж с причастием II).
II. Texts:
A. The World Wide Web.
B. Automation and robotics.

Активная лексика:

The CERN research centre - Европейский центр ядерных исследований
the Web - всемирная паутина
goal - цель
link - ссылка, связь
hypermedia - гиперсреда
browser - браузер, обозреватель
client - индивидуальный компьютер пользователя
access to - доступ к ….
decoder – дешифратор

1. Translate the following sentences and phrases with participle I, II:

1) While using the Web you can start your program anywhere you want.
2) The unit of a processor interpreting instructions is called a decoder.
3) Developing the new automated management systems, engineers use modern PCs.
4) Pursuing whatever strikes you fancy.
5) The program being updated.
6) Received messages are, as a rule, e-Mails.

2. Make up new words from verbs and nouns given below according to the example:

variable --- vary --- various --- variety

Use, textual, act, access, desire, depend.

TEXT A

Read and translate the text.

THE WORLD WIDE WEB (WWW)

The Web was originally developed in Switzerland, at the CERN research centre. The main idea was to create a way for the CERN physicists to share their work and to use community information. Before long, this idea of the Web expanded and was embraced within the Internet as a general mechanism for accessing information and services.

The WWW or Web is a project whose goal is to offer a simple, consistent interface to the vast resources of the Internet.

When you use the Web, you follow your nose: i.e., you start anywhere you want, and you jump from one place to another pursuing whatever strikes your fancy. With only a few simple commands, you can jump way around the Internet like a hyperactive flea at a dog convention.

To understand the Web we need to start with the idea of hypertext. Hypertext is data that contain links to other data. A simple example of hypertext is an encyclopedia, the entry on "Trees". At the end of the article you see a reference saying, "For related information see Plants". This last line is a link from the "Trees" article to the "Plants" article. The problem is that the value added to regular text by hypertext links depends on how useful the links really are.

The Web is based on hypertext that is a lot more complex. There may be links anywhere within a document, not just at the end. A hypertext document, in the language of the Web, is something that contains data and links to other documents. The program that you use to read a hypertext document is called a browser. As you follow one link to another, it means that you are navigating the Web.

The word hypermedia is referring to documents that contain a variety of data types and not just plain text. So, the Web does contain some hypermedia1, but most of what you see will be plain vanilla hypertext': textual material that you can display on your screen.

The job of your browser is to act as a window into the Internet by following links you desire, and by accessing each document using an appropriate method.

So, the Web does allow you to access all kinds of Internet resources, just by using a browser to "read" the appropriate document. The web also uses a client/server system.

Comprehension

A. Answer the following questions in your notebook:

1) What do we need to understand the Web?
2) What is a hypertext document in the language of the Web?
3) What programs do we call «browser»?
4) What does the Web contain?
5) What does the Web allow users?

B. Which of the answers is the correct one?

1. What is the goal of the www?
   a) to offer a simple consistent interface to the vast recourses of the Internet;
   b) to check information;
   c) to use a client/server system.

2. Where was the Web originally developed?
   a) in Russia;
   b) in the USA;
   c) in Switzerland.

3. What is the Web based on?
   a) on links;
   b) on hypertext;
   c) on on a browser.

4. What does the Wed allow users?
   a) to start with the idea of hypertext;
   b) to learn IRC commands;
   c) to allow you to access all kinds of Internet resources.

C. Complete the sentences:

1) The Web was originally (1) …… in Switzerland
2) The Web is a project whose goal is to offer a simple, consistent (2) …… to the vast resources of the Internet.
3) To understand the Web we need to start with the (3) …… of hypertext.
4) The Web (4) …… on hypertext that is a lot more complex.
5) The program that you use to read a hypertext document is (5) …… a browser.

a) called c) developed
b) based d)interface
e) idea

D. Divide the text into logical parts and in title them.

E. Using task D give a short summary of the text.

TEXT B

Read and translate the text.

MEDICAL AUTOMATION AND ROBOTICS

Medical Innovation

The founder of Robotics is a co-inventor of the ***Biojector - a Needle-Free Injection Management System*** shown below. Patent numbers include US Patents 5,520,639, 5,399,163 and 5,383,851.

Medical Assembly/Inspection
Vision Integration

We purchase the most suitable off-the-shelf vision equipment for a given application. We integrate each element of the system and we develop the required software algorithms to perform the machine vision task. In addition, we are able to provide the necessary material handling equipment (conveyors, robotics,-etc) for production applications.

- *Lighting*

Prior to implementation, SSI Robotics performs experiments to optimize the lighting conditions for each new application.

- *Vision Inspection*

The primary function of SSI Robotics' vision systems is to perform part inspection in a production environment. In some cases, vision systems may eliminate the need for human operators. Vision inspection for use in Quality Assurance, Quality Control and Process Control are rapidly growing areas. New low cost, full color vision systems are readily available.

- *Vision Guidance*

SSI Robotics uses vision systems for robot guidance. Vision enables the accurate pickup of parts from conveyors. In addition, vision guided pickup allows the use of flexible flat-belt conveyor feeders eliminating the need for tape feeders or custom vibratory bowls. 1 Machine vision also improves accuracy and flexibility in part placement.

In the medical device industry, one faulty product could mean a liability disaster. To ensure zero defects and to comply with regulations, we use Cognex® machine vision systems. In addition to improved quality, Cognex systems provide cost-efficient inspection and reduced waste. Moreover, Cognex systems enable part traceability and inventory tracking by reading part codes.

Comprehension

A. Answer the following questions in your notebook.

1) Why is the Biojector – a Needle – Free Injection management system the most suitable off-the-shelf vision equipment?

2) What is the primary function of SSI Robotics vision systems?

3) What does vision guided pickup allow?

4) What can one faulty product mean in the medical device industry?

5) What do Cognex® machine vision systems provide?

B. Which of the answers is the correct one?

1) Why does SSI Robotics perform experiments prior to implementation?

a) to save time;
b) to save energy;
c) to optimize the lighting condition for each now application;

2) What may vision systems eliminate?

a) the need for automation;
b) the need for human operation;
c) the need for conveyors;

3) Why are Congnex® machine vision systems used?

a) to ensure zero defect;
b) to comply with regulation;
c) to ensure zero defect and to comply with regulation;

C. Give a short summary of the text.

UNIT IX.
HOW TO MANAGE CONTROL PROGRAM

I. Grammar Presentation:
Infinitive (инфинитив).
Participle construction (конструкции с причастием).
II. Texts:
A. Electronic systems and components.
B. Developing a system.

Активная лексика:

feedback – обратная связь, обратное питание
input – ввод (подача)
block diagram – блок-схема, пространственная диаграмма
closed loop – сомкнутая петля, замкнутый виток
open loop – незамкнутый контур
adjust – регулировать
readjust – повторно регулировать
thermostat – терморегулятор

denote – обозначать
Morse code – азбука Морзе
loudspeaker – громкоговоритель

A. Choose in the following sentences infinitives and name the function of them**:**
1) When you start to think about any control problem, it is good to try to think of it as a system.
2) You will need to think about what you are trying to do and to break this down into a block diagram form.
3) When a driver turns the steering wheel of the car, the car will start to turn.

B. Choose in the following phrases participle constructions:
system, represented by series of boxes;
by looking at how far the car is turning;
the driver turns the steering wheel;
you hear the resulting signal.

Make up new words from given below according to the example:
present – represent:
put, use, specific, adjust, boil, base, vary, frequent, type, digit.

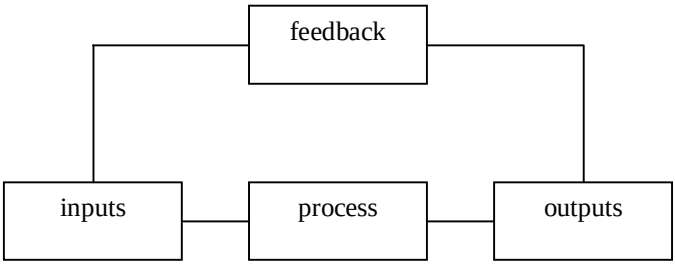
TEXT A
Read and translate the text.

ELECTRONIC SYSTEMS AND COMPONENTS

When you start to think about any control problem, it is good to try to think of it as a system, represented by a series of boxes in a block diagram, which are linked together. You will then need to think about what you are trying to do and to break this down into a block diagram form. Each part of the project will be represented by a box. At this stage you only need to know what inputs, processes and outputs you will require. Whilst a systems approach is useful for any type of design problem, this chapter will help you with electronic design specifically.

Systems that have feedback are called closed loop systems and those without feedback are called open loop systems. Feedback means taking an output signal or part of it and feeding it back into the input.

A way of explaining it could be: when a driver turns the steering wheel (the input) of her car, the car will start to turn. By looking at how far the car is turning (the output) the driver can then readjust the steering to perform the required manoeuvre. The feedback element is looking at what the car is doing and adjusting the steering appropriately. Another example could be the thermostat on your central heating at home. This relays information about the temperature of the room back to your central heating boiler and adjusts it.



Electrical signals take two forms:

Analogue signals which vary in amplitude over time.

Digital signals which have only two stats, off or on and these are usually denoted by 0 for off and 1 for on.

An analogue signal is fed to the loudspeaker of a radio; you hear the resulting signal as variations of frequency and loudness.

A typical digital signal could be said to be Morse code; the information is only carried in the on/off signal, not in the frequency, which should not change.

Comprehension

A. Answer the following questions in your notebook:

1) What should you think about dealing with any control problem?
2) What three stages do you need to know about working with a block diagram?
3) How are systems that have feedback called?

4) What does a feedback mean?
5) How many basic forms do electrical signal take? What are they?
6) How is the information carried when a typical digital signal can be said to be Morse code?

B. Which of the answer is the correct one?

1) How are systems that have feedback called?
   a) open loop systems;
   b) closed loop systems;
   c) feedback systems.

2) What will happen when a driver turns the steering wheel (the input) of the car?
   a) the car will stop;
   b) the car will be damaged;
   c) the car will start to run.

3) How do analogue signals vary?
   a) in diagram;
   b) in amplitude over time;
   c) the don't vary at all.

4) What is happening when an analogue signal is fed to loud-speaker of a radio?
   a) you see a diagram
   b) a radio stops working
   c) you hear the resulting signal

C. Complete the sentences.
1) Each part of the project will ……by a box.
2) Feedback means taking …… signal or …… of …… and feeding it back into the input.
3) Thermostat on you central heating at home relays information about …… of the room.
4) A typical digital signal could be said to be ……

D. Divide the text into logical parts and entitle them.

E. Using task D give a short summary of the text.

TEXT B

Read and translate the text.

DEVELOPING A SYSTEM

These blocks of system (often called black boxes) contain the elements to enable the project to work. However at first it is necessary to decide what each element is to do.

You need to ask yourself:

"What is the system to do?"

"What do I need to measure?"

"What inputs do I need?"

"What processes do I want to happen?"

"What do I want to happen when these inputs occur?"

For instance: the task may be to make an automatic watering device for use in a green house. The questions to ask are:

"How do I sense the dryness of the soil?"

"What is needed to control the output devices?"

"What are the output devices to do?"

The answers may be:

Use metal electrodes in the soil.

Measure their resistance and when it increases switch on the output.

Switch on the water supply to the sprinkler system.

Switch off the water when the soil is at the correct moisture level.

Perhaps sound a warning device or switch on an indicator light.

The next stage could be to discuss your system with someone who knows about gardening. They may tell you that plants should not be watered in bright sunlight, so how can you modify your system to cope with this? Perhaps other sensors are required to sense light and/or temperature.

Your plants will then be watered when both sensors tell the system that the soil is dry and the sun is not shining.

It can be seen that you have already designed the system in outline without considering the electronics. There are a range of simple circuits which can be linked together based on what happens to their inputs and outputs. Indeed when designing using integrated circuits this is exactly what occurs. The designer is only interested in the signals which enter and leave the integrated circuit and not the electronics inside.

The decision-making process can be done either by which out the steps or by using a flow chart and you are advised to use this method in your folio. You are also advised to draw a block diagram of your system.

The system has input devices called sensors, a circuit which processes these input signals and output devices which control the project. Sometimes feedback is used to make the control more precise. In this case, when the soil gets wet the sensor senses it and switches off the water source.

Comprehension

A. Answer the following questions:

1) What kind of elements does a black boxes system contain?
2) What should you think about before making an automatic watering device?
3) What must sensors tell the system to get your plants watered?
4) What are sensors?

B. Complete the sentences

1) The block of system (often called black boxes) contain …… to enable the project to work.
2) To make an automatic watering device you should discuss you system with someone who knows about ……
3) The designer is only interested in …… which enter and …… the integrated circuit and not the electronics inside.
4) The system has input devices called …… , a circuit which processes these input signals and …… devices which control the project.

C. Divide the text into logical parts and entitle them.

D. Using task D give a short summary of the text.

UNIT X.
PROCESSING INFORMATION

I. Grammar material:

Relative clauses (придаточные предложения причины и следствия)

II. Texts:

A. Windows.

B. Hardware.

Активная лексика:

simplify - упрощать
interface - интерфейс
interact - взаимодействовать
to respond - отвечать
awkward - неудобный
intimidating - запугивающий
to point at - указывать
numerous - многочисленный
dissimilar - различный
scanned - сканированный
utilizing - утилизировать
to reflect - отражать

1. Which of answers is the correct one?

1) Why do we need Windows?

b) It makes your IBM PC carry to use;
c) It helps you to use your keyboard;
d) It helps you to use internet.

2) What does the interface between you and the computers consist of?

a) The screen and the mouse;
b) The screen and the keyboard;
c) The screen and the hardware.

3) How many windows con you have on the screen at a time?

a) Only one
b) Now more than two
c) Numerous windows

4) How is a facility which lets you copy material between dissimilar document types called?

a) DOS;
b) UNIX;
c) Clipboard.

2. Complete the sentences.

1) Windows makes your IBM PC easy to use, because It simplify …… interface.
2) Most people consider DOS to be akward intimidating or intimidating, because it isn't very …… At interpreting commands/
3) You can have numerous windows on the screen at a time, so you can easily …… between programs.
4) Windows provides the means for seamlessly joining the capabilities of very different applications programs. So you can …… portions of one document into another.

3. Divided the text into logical parts in title them

4. Give a short summary of the text.

TEXT A

Read and translate the text.

WINDOWS

Microsoft Windows (or simply Windows) is a software program that makes your IBM PC easy to use. It does this by simplifying the computer's user interface.

The word interface refers, to the way you give your computer commands, the way you interact with it.

Usually the interface between you and the computer consists of the screen and the keyboard: you interact with the computer by responding to what's on the screen, typing in commands at the DOS command line to do your work.

DOS often isn't very intelligent at interpreting commands and most people consider it awkward or intimidating as a user interface.

With Windows, you can run programs, enter and move data around, and perform DOS-related tasks simply by using the mouse to go in all objects on the screen. Of course, you also use the keyboard to type in letters and numbers. Windows interprets your actions and tells DOS and your computer what to do.

Windows owes its name to the fact that it runs each program or document in its own separate window. You can have numerous windows on the screen at a time, each containing its own program and/or document. You can then easily switch between programs without having to close one down and open the text.

Another feature is that Windows has a facility - called the Clipboard - that lets you copy material between dissimilar document types, making it easy to cut and paste information from, say, a spreadsheet into a company report or put a scanned photograph of a house into a real estate brochure. In essence, Windows provides the means for seamlessly joining the capabilities of very different application programs. Not only can you paste portions of one document into another, but by utilizing more advanced document-linking features those pasted elements remain "live". That is, if the source document changes, the results will also be reflected in the secondary document containing the pasted data.

TEXT B

Read and translate the text.

HARDWARE

There are many hardware pieces in a computer system. Some are: the system board, power supply, keyboard, mouse, hard drive, monitor and the video card and its drivers.

The large metal box that is the main part of the computer is called the case. The case and its contents (power supply, system board, etc.) is called the system unit. The case has several functions.

- Protects the delicate electronics inside.
- Keeps electromagnetic emissions inside so your TV, cordless phone, and stereo don't go haywire when you power up the computer.
- Can also hold the monitor.

You communicate with your computer with the keyboard. With it, you type instructions and commands for the computer, and information to be processed and stored. Many of the keys on the keyboard are like those on a typewriter; letter keys, punctuation keys, shift keys, tab, the spacebar, and many specialized keys.

The mouse works by sliding it around on a flat surface. It does not work if you hold it in the air like a remote control! The desktop is fine, but a ready-made mouse pad is the best surface to roll the mouse on. Its surface is flat and usually somewhat textured. If a surface is too smooth or rough, the ball inside can slur. As you glide the mouse, the ball inside moves in the direction of your movement. You will see the arrow on your screen moving in unison. The arrow is called a pointer, and the most important part is the very tip of its point.

Any computer is not complete without the monitor, a TV-like device that usually sits on top of the computer. The monitor displays text characters and graphics. It allows you to see the results of the work going on inside your system unit. The image that you see is made up of tiny dots called pixels. The sharpness of the picture de-

pends on the number and size of them. The more pixels, the sharper the image. This is called resolution.

A display adapter card is actually what builds the video images; the monitor simply displays them. The display adapter is either built onto the system board or is an expansion card plugged into the system board.

1. Answer the following questions.

1) What hardware pieces in a computer system do you now?
2) What is the main part of the computer?
3) What do you need in order to type instructions and commands for the computer?
4) How is a TV-line device that usually sits on top of the computer called?

2. Complete the sentences.

1) The case and it's contents is called ……
2) The mouse work by …… It around on a flat surface.
3) A display adapter card is actually what builds …… Images.
4) The monitor displays…… and ……

3. Divide the text into logical parts and entitle them.

4. Using task D give a short summary.

UNIT XI.
PNEUMATICS

I. Grammar revision:

Conditional relative clauses (придаточные предложения условия).

Time relative clauses (придаточные предложения времени).

II. Texts:

A. Pneumatics.

B. Cylinders and valves.

Активная лексика:

pneumatics - пневматика
hydraulics - гидравлика
cylinder - цилиндр
valve - клапан
piston - поршень
pump(syn. compressor, syringe) - насос, компрессор
exhaust port - выпускной порт
inlet port - впускной порт
double acting cylinder - цилиндр двухстороннего действия

Grammar and lexis

1. Define the type of a relative clause in the following sentences and translate them:

1) If compressed air is used to produce motion this is called pneumatics.
2) You must disconnect the supply before you make alterations to the system.
3) You must wear eye protection while you are using pneumatics.
4) If the inside of the cylinder isn't very smooth a loss of air may occur.
5) When tubing comes adrift under pressure it can injure you.
6) After the air supply is disconnected the system is in the OFF state.

2. Read and try to remember:

when; while; as; after; as long as; as soon as; before; since; till, until; if; unless; provided.

1) He agreed to go on with the experiment provided we did not interfere.
2) As long as he goes on with his calculations, we cannot begin the tests.
3) He never does anything unless he is made to.

3. Look at the derivatives of the verb 'to connect' and translate them without using a dictionary.

Connect – connector – connecting – connection – disconnection – disconnect.

4. Fill in the blanks with appropriate words.

- The phone was invented for …… people.
- You can easily …… these details.
- When talking on the phone we were ……
- International festivals help to establish …… between different nations.
- Why doesn't this hairdryer wok?- May be there is a …… of some details inside it.

TEXT A

Read the text with the dictionary.

PNEUMATICS

Pneumatics use compressed air to produce both linear and rotary motion. If the air is replaced with a liquid such as oil then this is called *hydraulics.* The air can be compressed by an electric pump called a compressor or for certain purposes by pumping by hand. For instance, in school, a car inner tube can be pumped up using a foot or hand pump, the stored air then being used to power a very simple mechanism or project. Similarly syringes can represent very simple systems.

You probably have seen pneumatics used in buses and trains for closing the doors and operating the brakes on large vehicles. You can tell that air is being used by the loud hissing sound when the system is in use. Hydraulics are commonly seen on bulldozers and diggers. The main use for pneumatics is to provide economical power with reliability. It is used in industry to operate machines. Its main advantage over electronic solutions is that it can provide short bursts of high power which can be difficult to achieve by electronic means. Pneumatics can be used in conjunction with electronics to provide complex, efficient machines.

In school, you are likely to find pneumatic boards containing a range of cylinders and valves which can be easily connected together by plastic tubing. The tubing locks into the connectors and is easily removed. Some school pneumatics systems are made from translucent plastic so that internal working parts can be easily seen and understood. In the same way that electronic components have circuit symbols to represent them and allow easy drawing, there are symbols for pneumatic components, which will help you to produce a diagram of your proposed project.

Comprehension

A. Answer the following questions in your notebook:

1) What is the difference between pneumatics and hydraulics?
2) Where can we see these systems in use?
3) What is the main advantage of pneumatics over electronic solutions?
4) What are the main parts of pneumatics system?
5) Why are some pneumatics systems made from translucent plastic?
6) Do pneumatic components have circuit symbols?

B. Which of the answers is the correct one:

1) Pneumatics use compressed air to produce … motion
   a) linear;
   b) rotary;
   c) both linear and rotary.
2) Hydraulics are commonly seen … .
   a) on bulldozers and diggers;
   b) in buses and trains;
   c) in every mechanism.

3) The main use for pneumatics is … .
   a) to provide short bursts;
   b) to provide economical power;
   c) to operate machines.

4) Pneumatics can be used in conjunction with … to provide efficient machines.

a) hydraulics;
b) physics;
c) electronics.

C. Complete the following sentences:

1) The air can be compressed by an electric pump called …… .
2) You probably have seen pneumatics used in buses and trains for …… .
3) Its main advantage over electronic solutions is …… .
4) Pneumatics can be used in conjunction with …… .
5) Some school pneumatics systems are made from translucent plastic so that …… .
6) In the same way that electronic components have circuit symbols to …… .

D. Divide the text into logical parts and entitle them.

E. Using task D give a short summary of the text.

TEXT B.

Read and translate the text.

CYLINDERS AND VALVES

The components which give movement are called *cylinders* and those which switch them on or off are called *valves.*

Both have movable pistons incorporated in them, the air is prevented from moving past the piston by plastic seals. The inside of the cylinder is very smooth so that a close fit between the piston seal and cylinder is made preventing a loss of air.

The points where air is fed into and out of valves and cylinders are called *ports,* and the valves are named by the number of ports which they have, i.e. a 3 port valve. In this valve there is an air inlet port, an exhaust port and an outlet port which connects to a cylinder.

A 5 port valve has an air inlet port, two exhaust ports, and two ports for connection to a double acting cylinder. The diagram shows 3 and 5 port manually operated and mechanically operated valves. The different types of operators can be fitted to any type of valves.

Essential principles of safety

- You must wear eye protection while using pneumatics, as compressed air can easily blow dirt and dust into the eye.
- If tubing comes adrift under pressure it can flick about and may hit the eye.
- You must disconnect the supply before making alterations to the system.
- Never allow air at pressure to touch your skin, it can force oil and particles under your skin.
- Keep the pressure as low as possible (1-2 bar).

Comprehension

A. Answer the following questions:

1) How do we call the components which give movement?
2) What is the air prevented from moving past the pistons by?
3) What does a 3 port valve have?
4) What does a 5 port valve have?
5) Can you name essential principles of safety?

B. Complete the sentences:

1) The points where air is fed into and out of valves and cylinders are called …… .
2) A 5 port valve has …… .
3) You must wear …… while using pneumatics, as compressed air can easily blow dirt and dust into the eye.
4) You must disconnect the supply before …… .
5) The components which give movement are called …… and those which switch them on or off are called …… .

C. Divide the text into logical parts and entitle them.

D. Using task C give a short summary of the text.

UNIT XII.
INFORMATION TECHNOLOGY

I. Grammar revision:
Infinitive constructions (инфинитивные конструкции).
Relative clauses (придаточные предложения).
II. Texts:
A. Information technology.
B. Modern programming.

Активная лексика:

word processor - текстовый редактор
to retrieve - исправлять
to move around - просматривать
submission - представление
to go through - проверять
storage - хранение
alterations - изменения
spreadsheet - электронная таблица
package - компьютерная программа
enhance - улучшать
reliability - надежность
debugging - настройка

Grammar and lexis

1. Define the function of the infinitive in the following sentences and translate them:

1) You can scroll through workbooks at the same time to identify differences between them.
2) Microsoft Office Excel is the spreadsheet program that makes it easier to analyze and share information.

3) To share the information is easy using Windows SharePoint Services.
4) You can create or view content with restricted permission using Information Rights Management.
5) Smart documents are programmed to extend the functionality of your workbook.

2. Define the type of relative clauses in the following sentences:

1) Once you have mapped the XML elements to your worksheet, you can easily import and export XML data into and out of the mapped cells.
2) When you specify a range as a list, you can manage and analyze the data independent of other data outside the list.
3) If you use a word processor to write a report, then you can start to note down your ideas.
4) When you click on a cell within the total row, you can pick from a drop-down list of aggregate functions.
5) As soon as you want to share the information, use Windows SharePoint Services.
6) The new Research task pane offers a wide variety of reference information and expanded resources provided you have an Internet connection.

3. Form the nouns from the following verbs using suffixes:

Move, rely, permit, process, examine, pack, spell, store, manipulate, use, enhance, develop, program.

TEXT A

Read the text and be ready to discuss it.

INFORMATION TECHNOLOGY

Information Technology is a tool which you can use to enhance your coursework both in its production and its final appearance. If you use a word processor to write a report, then you can start to note down ideas and comments from an early stage of your work.

This can be saved to disc and retrieved at a later date. You can then sort, move around and improve your writing gradually as your project progresses. Finally as the time for submission gets nearer, you will only have a small task to go through the document to improve its readability. Another advantage is that you are able, on most word processors, to check spelling. You are likely to have marks deducted for poor spelling in most examinations.

Information Technology is concerned with the storage, retrieval and manipulation of data using computers. In Design and Technology all of these can be used in a wide variety of ways. The National Curriculum at present includes IT capability and the strands are handling information, communicating information, modeling, measurement and control. Whilst it must be remembered that learning to use any IT *package* can be time consuming, time is saved once the drawing or document is stored on disc, as changes and alteration are easily done. It is advised that you become proficient in the use of a relatively few packages and use these regularly; in this way you will work most efficiently. At all times you must decide on the most effective way to work, perhaps using a computer to draw one simple diagram could waste a lot of time. Most modern packages have extensive help menus that are context sensitive which means that if you ask for on screen help, the help screens shown will correspond to the function being used at the time.

With the advent of packages to work within WINDOWS, most packages will look similar, which will reduce the time needed to become familiar with them. Similarly the use of a mouse and pull down menus can speed up usage.

Integrated packages are available which contain a word processor, a database and a spreadsheet, these are useful because the three are designed to work easily together, therefore the interchange of data can be quickly achieved.

Comprehension

A. Which of the following statements are true?

1) If you use a word processor to write a report, then you can start to note down ideas and comments from an early stage of your work.

2) On most word processors you aren't able to check spelling.
3) Information Technology is concerned with the storage, retrieval and manipulation of data using computers.
4) It is advised that you become proficient in the use of almost all packages and use these regularly; in this way you will work most efficiently.
5) Most modern packages have extensive help menus that are context sensitive.
6) With the advent of packages to work within WINDOWS, most packages will look similar, which will increase the time needed to become familiar with them.

B. Answer the following questions:

1) What is Information Technology?
2) What can you do using a word processor?
3) What is another advantage of word processors?
4) What does the National Curriculum include at present?
5) What is IT concerned with?
6) How can you work most efficiently?
7) What do most modern packages have?
8) Why are integrated packages useful?

C. Multiple choice. Which of the answers is the correct one?

1) You can then sort, … and improve your writing gradually as your project progresses.

a) enhance;
b) move around;
c) retrieve;

2) Another advantage is that you are able, on most word processors, to … spelling.

a) check;
b) write;
c) save.

3) It is advised that you become … in the use of a relatively few packages and use these regularly; in this way you will work most efficiently.

a) proficient;
b) efficient;
c) profane.

4) With the advent of packages to work within WINDOWS, most packages will look … .

a) different;
b) familiar;
c) similar.

D. Divide the text into logical parts and entitle them.

E. Write out of the text :
keywords;
the sentences expressing the main ideas of each logical part

F. Using your plan, the keywords, the sentences you've written out retell the text.

TEXT B.
Read and translate the text.

MODERN PROGRAMMING. QUALITY REQUIREMENTS

Whatever the approach to the software development may be, the program must finally satisfy some fundamental properties; bearing them in mind while programming reduces the costs in terms of time and/or money due to debugging, further development and user support. Although quality programming can be achieved in a number of ways, following five properties are among the most relevant:

•*Efficiency:* it is referred to the system resource consumption (computer processor, memory, slow devices, networks and to some extent even user interaction) which must be the lowest possible.

•*Reliability:* the results of the program must be correct, which not only implies a correct code implementation but also reduc-

tion of error propagation (e.g. resulting from data conversion) and prevention of typical errors (overflow, underflow or zero division).

•*Robustness:* a program must anticipate situations of data type conflict and all other incompatibilities which result in run time errors and stop the program. The focus of this aspect is the interaction with the user and the handling of error messages.

•*Portability:* it should work as it is in any software and hardware environment, or at least without relevant reprogramming.

•*Readability:* the purpose of the main program and of each subroutine must be clearly defined with appropriate comments and self explanatory choice of symbolic names (constants, variables, function names, classes, methods, etc.).

Methodologies

The first step in most formal software development projects is requirements analysis, followed by modeling, implementation, and failure elimination (debugging). There exist a lot of differing approaches for each of those tasks. One approach popular for requirements analysis is Use Case analysis.

Popular modeling techniques include Object-Oriented Analysis and Design (OOAD) and Model-Driven Architecture (MDA). The Unified Modeling Language (UML) is a notation used for both OOAD and MDA.

A similar technique used for database design is Entity-Relationship Modeling (ER Modeling). Implementation techniques include imperative languages (object-oriented or procedural), functional languages, and logic languages. Debugging is most often done with IDEs like: Visual Studio, NetBeans, and Eclipse.

A. Find English equivalents of the following words and word combinations:

эффективность, настройка, свойства, надежность, деление на ноль, типичные ошибки, иметь в виду, взаимодействие, устранение ошибок, разные подходы, снижать затраты, использование ресурсов.

B. Which of the following statements are true or false?

1) Whatever the approach to the software development may be, the program must finally satisfy some fundamental properties.

2) Quality programming can be achieved only in one way.

3) Program should work as it is in any software and hardware environment, or at least without relevant reprogramming.

4) The purpose of the main program and of each subroutine must be clearly defined with appropriate comments and self explanatory choice of symbolic names.

5) One approach popular for requirements analysis is Model-Driven Architecture.

6) The Unified Modeling Language (UML) is a notation used for both OOAD and MDA.

SUPPLEMENTARY READING

THE FIRST COMPUTERS

In 1930 the first analog computer was built by American named Vannevar Bush. This device was used in World War II to help aim guns.

Many technical developments of electronic digital computers took place in the 19£ps and 1950s. Mark I, the name given to the first digital computer, was completed in 1944. The man responsible for this invention was Professor Howard Aiken. This was the first machine that could figure out long lists of mathematical problems at a very fast rate.

In 1946 two engineers at the University of Pennsilvania, J.Eckert and J.Maushly, built their digital computer with vacuum tubes. They named their new invention ENIAC (the Electronic Numerical Integrator and Calculator),

Another important achievement in developing computers came in 1947, when John von Neumann developed the idea of keeping Instructions for the computer inside the computer's memory. The contribution of John von Neumann was particularly significant. As contrasted with Babbage's analytical engine, to store only data, von Neumann's machine, called tire Electronic,Discrete VariableComputer, or

EDVAC, was able to store both data and instructions. He also contributed to the idea of storing data and instructions in a binary code that uses only ones and zeros. This simplified computer design. Thus computers use two conditions, high voltage, and low voltage, to translate the symbols by which we communicate into unique combinations of electrical pulses. We refer to these combinations as codes.

Neumann's stored program computer as well as other machines of that time were made possible by the invention of the vacuum tube that could control and amplify electronic signals. Early computers, using vacuum tubes, could perform computations in thousandths of seconds, called milliseconds, instead of seconds required by mechanical devices.

ADVANTAGES OF COMPUTER DATA PROCESSING

Computer-oriented data processing systems or just computer data processing systems are not designed to imitate manual systems. They should combine the capabilities of both humans and computers. Computer data processing systems can be designed to take advantage of four capabilities of computers.

1. Accuracy. Once data have been entered correctly into the computer component of a data processing system, the need for further manipulation by humans is eliminated, and the possibility of error is reduced Computers, when properly programmed, are also unlikely 'to make computational errors. Of course, computer systems remain vulnerable to the entry by humans of invalid data.

2. Ease of communications. Data, once entered, can be transmitted wherever needed by communications networks. These may be either earth or satellite-based systems. A travel reservation system is an example of a data communications network. Reservation clerks throughout the world may make an enquiry about transportation or lodgings and receive an almost instant response. Another example is an office communications system that provides executives with access to a reservoir of date, called a corporate data base, from their personal microcomputer work stations.

Capacity of storage. Computers are able to store vast amounts of information, to organize it, and to retrieve it in ways that are far beyond the capabilities humans. The amount of data that can be stored on devices^ such as magnetic discs is constantly increasing. All the while, the cost per character of data stored is decreasing.

Speed The speed, at which computer data processing systems can respond, adds to their value. For example, the travel reservations system mentioned above would not be useful if clients had to wait more than a few seconds for a response. It response required might be a fraction of a second.

Thus, an important objective in the design of computer data processing systems is to allow computers to do what they do best and to free humans from routine, error-prone tasks. The most cost-effective computer data processing system is the one that] does the job effectively and at the least cost. By using computers in a cost-effective manner, we will be better able to respond to the challenges and opportunities of' our post-industrial, information-dependent society.

The history of the computer science and the computer engineering in the USA and USSR.

HOWARD H. AIKEN AND THE COMPUTER

Howard Aiken's contributions to the development of the computer -notably the Harvard Mark I (IBM ASSC) machine, and its successor the Mark II - are often excluded from the mainstream history of computers on two technicalities. The first is that Mark I and Mark II were electromechanical rather than electronic; the second one is that Aiken was never convinced that computer programs should be treated as data in what has come to be known as the von Neumann concept, or the stored program.

It is not proposed to discuss here the origins and significance of the stored program. Nor I wish to deal with the related problem of whether the machines before the stored program were or were not "computers". This subject is complicated by the confusion in actual names given to machines. For example, the ENIAC, which did not in-

corporate a stored program, was officially named a computer: Electronic Numeral Integrator And Computer. But the first stored-program machine to be put into regular operation was Maurice Wiles' EDSAC: Electronic Delay Storage Automatic Calculator. It seems to be rather senseless to deny many truly significant innovations (by H.H. Aiken and by Eckert and Mauchly), which played an important role in the history of computers, on the arbitrary ground that they did not incorporate the stored-program concept. Additionally, in the case of Aiken, it is significant that there is a current computer technology that does not incorporate the stored programs and that is designated as "Harvard architecture", though, it should more properly be called "Aiken architecture". In this technology the program is fix and not subject to any alteration save by intent - as in some computers used for telephone switching and in ROM.

OPERATION OF THE ENIAC

Aiken was a visionary, a man ahead of his times. Grace Hopper and others remember his prediction in the late 1940s, even before the vacuum tube had been wholly replaced by the transistor, that the time would come when a machine even more powerful than the giant machines of those days could be fitted into a space as small as a shoe box.

Some weeks before his death Aiken had made another prediction. He pointed out that hardware considerations alone did not give a true picture of computer costs. As hardware has become cheaper, software has been apt to get more expensive. And then he gave us his final prediction: "The time will come", he said, "when manufacturers will gave away hardware in order to sell software". Time alone will tell whether or not this was his final look ahead into the future.

THE DEVELOPMENT OF COMPUTERS IN THE USA

In the early 1960s, when computers were hulking mainframes that took up entire rooms, engineers were already toying with the then - extravagant notion of building a computer intended for the sole use of one person, by the early 1970s, researches at Xerox's Polo Alto Research Center (Xerox ARC) had realized that the pace of improvement in the technology of semiconductors - the chips of silicon that are the building blocks of present-day electronics - meant that sooner or later the PC would be extravagant no longer. They foresaw that computing power would someday be so cheap that engineers would be able to afford to devote a great deal of it simply to making non-technical people more comfortable with these new information - handling tools, in their labs, they developed or refined much of what constitutes PCs today, from "mouse" pointing devices to software "windows".

ГРАММАТИЧЕСКИЙ СПРАВОЧНИК

The active and the passive voice

В английском языке глагол имеет два залога: действительный (the Active Voice) и страдательный (the Passive Voice).

Глагол употребляется в действительном залоге, если подлежащим в предложении является лицо (или предмет), которое совершает действие*: They tested the new device yesterday.* – Вчера они протестировали новый прибор.

Глагол в страдательном залоге выражает действие, которое направлено на лицо (или предмет), выраженное подлежащим. *The new device was tested by them yesterday. – Новый прибор был протестирован ими вчера*.

Страдательный залог образуется при помощи глагола to be в соответствующем времени и Participle II смыслового глагола. Страдательный залог употребляется в тех случаях, когда лицо, совершающее действие, неизвестно или представляется несущественным.

Если действие совершается одушевленным существительным, то используется предлог *by: The article was translated by the students. – Статья была переведена студентами.*

Когда действие совершается с помощью какого-либо предмета, то используется предлог *with: The article was written with a pencil. – Статья была написана карандашом.*

В английском языке страдательный залог могут образовывать глаголы, управляющие предложным дополнением (т.е. глаголы с предлогом). В пассивной конструкции предлог сохраняется.

We looked for Mike everywhere. – Mike was looked for everywhere.

На русский язык страдательный залог переводится:

- сочетанием глагола быть с краткой формой причастия страдательного залога;
- глаголом с окончанием на -ся, -сь;
- неопределенно-личными предложениями (без подлежащего).

Формальные признаки глаголов-сказуемых в активном залоге.

	Indefinite (Simple) Констатация факта Повторяемость действия	Continuous Процесс to be+V-ing	Perfect Завершенность to have+V_3	Perfect Continuous Процесс в течение некоторого периода времени to have + been +V-ing
Present	V,V-s Do, Does V? I write / He writes Я пишу / Он пишет Usually, often, always, seldom, , every day (week, month, year), in the morning	Am Is +V-ing Are I am writing. Я пишу (сейчас) Now, at present, at the moment, still	Have +V_3 Has I have written. Я написал. Already, yet, ever, never, just, lately, recently, since	Have been +V-ing Has I have been writing. Я пишу. For, since, lately, all my life, all this week, these 3 years, hitherto

Past	V, V-ed Did V? I wrote. Я написал. Yesterday, the day before yesterday, last month, a week ago, 5 years ago, in 1985, when…	Was + V-ing Were I was writing. Я писал. Yesterday at 6 o'clock, all the time, all day long, the whole evening, while, when…	Had + V_3 I had written. Я написал. By yesterday, by June, by 1985, yesterday by 3 o'clock, before he came	Had been + V-ing I had been writing. Я писал. For 2 hours when he came.
Future	Shall / will +V He will write. Он напишет. Tomorrow, next summer (week, month…), in a minute, in a year, in 2 days	Shall / will be + V-ing He will be writing. Он будет писать. Tomorrow at 3 o'clock	Shall / will have +V_3 He will have written. Он напишет. Tomorrow by 3 o'clock, by tomorrow, by next summer, by 2010	Shall / will have been V-ing He will have been writing. Он будет писать (завтра уже 3 часа, когда я приду)

Формальные признаки глаголов-сказуемых в пассивном залоге и их перевод.

	Indefinite	Continuous	Perfect
Present	am is + Ved are The device is tested. Прибор испытывается (испытан).	am is + being + Ved are The device is being tested. Прибор испытывается (сейчас).	have + been + Ved has The device has been tested. Прибор был испытан.
Past	was + Ved were The device was tested. Прибор был испытан (испытывался).	was + being + Ved were The device was being tested. Прибор испытывался.	had + been + Ved The device had been tested. Прибор был испытан.
Future	shall/will + be + Ved The device will be tested. Прибор будет испытываться.	----------	shall/will + have + been + Ved The device will have been tested. Прибор будет испытан.

THE PARTICIPLES
(*Причастие***)**

Причастие **–** это неличная форма глагола, сочетающая в себе признаки прилагательного (или наречия) с признаками глагола.

В английском языке существует два вида причастий: Participle I и Participle II, причем последнее имеет лишь одну форму, в то время как первое – четыре. Как и в русском языке, английские причастия могут стоять как после определяемого слова, так и после него.

A shining star – сияющая звезда.

The stars shining in the dark sky seem blue. – Звезды, сияющие в темном небе, кажутся голубыми.

Видовременные формы причастий.

Tense	Active	Passive
Indefinite	mixing (смешивающий, смешивая, смешивание)	being mixed (смешиваемый)
Perfect	having mixed (смешавший, смешав)	having been mixed (будучи смешанным)
Past Perfect		mixed (смешанный)

Примеры употребления различных форм причастия:

1) *A triode is a vacuum tube containing three electrodes.* Триод - это вакуумная лампа, содержащая (которая содержит) три электрода.

2) *Being the cheapest of the metals, iron is widely used.* Так как железо является самым дешевым из всех металлов, оно находит широкое применение. (Будучи самым дешевым из всех металлов, железо находит широкое применение.)

3) *When hanging freely, the needle will point north and south in the magnetic meridian.* Находясь в свободном состоянии, стрелка будет указывать на север и юг магнитного меридиана. (Когда

стрелка будет находиться в свободном состоянии, она будет указывать на север и юг магнитного меридиана.)

4) *The substance being investigated is first weighed.* Исследуемое вещество сначала взвешивают.

5*) The equipment needed for the experiment was carefully checked.* Оборудование, необходимое (которое необходимо) для опыта, было тщательно проверено.

6*) Because of the gradual change, when heated, glass has no definite melting temperature.* Из-за того, что стекло при нагревании плавится постепенно, оно не имеет определенной температуры плавления.

7) *Considered from this point of view the question will be of great interest.* При рассмотрении с этой точки зрения (будучи рассмотрен с этой точки зрения), вопрос представляет большой интерес. (Если вопрос рассматривать с этой точки зрения, он представит большой интерес.)

8) *The device referred to is a gyroscope.* Прибор, на который ссылаются, - гироскоп.

9) *The property possessed by these materials is known, as resistance.* Свойство, которым обладают эти материалы, известно как сопротивление.

10) *Having lost some of its electrons the atom has a positive charge.* Утратив часть электронов (после того, как атом утратил часть электронов), он становится положительно заряженным.

11) *Having been heated for several hours the substance began to melt.* После того, как вещество нагревали в течение нескольких часов, оно начало плавиться.

Независимый причастный оборот имеет собственное подлежащее, выраженное существительным или личным местоимением. На русский язык этот оборот переводится придаточным предложением с союзами *если, так как, когда, после того как* и др.

1) *The temperature being raised, the kinetic energy increased.* Так как температура повысилась, кинетическая энергия возросла.

2) *The unit of power is the watt, one watt being the product of one volt by one ampere.* Единица мощности - ватт, а ватт - это произведение одного вольта на один ампер.

THE INFINITIVE
(Инфинитив)

Инфинитив – это неличная форма глагола, сочетающая в себе свойства существительного и глагола.

Формальным признаком инфинитива является частица **to,** отсутствующая после модальных глаголов. Инфинитив может выражать характер действия и имеет залог.

Tense	Active	Passive
Indefinite	to ask	to be asked
Continuous	to be asking	
Perfect	to have asked	to have been asked
Perfect Continuous	to have been asking	

Переводим:

1) неопределенной формой глагола;
2) существительным;
3) глаголом в придаточном предложении (определение, обстоятельство, дополнение с союзами *который, что, чтобы*).

Инфинитив в функции подлежащего**:**

To explain the motion of planets is not very easy. - Объяснить (объяснение) движения планет не очень просто.

Инфинитив в функции обстоятельства:

Newton came to Cambridge to continue his education. - Ньютон приехал в Кембридж, чтобы продолжить свое образование.

To get good results Newton had to carry out a lot of experiments. Чтобы подучить хорошие результаты, Ньютон должен был проделать много опытов.

Инфинитив в составном именном сказуемом:

The task of the Russian engineers is to use solar energy for peaceful purposes. - Задача русских инженеров заключается в том, чтобы использовать солнечную энергию в мирных целях.

Инфинитив в составном модальном сказуемом:

The scientist was to read a paper at the conference. -Ученый должен был выступить на конференции.

THE GERUND
(Герундий)

Герундий – это неличная форма глагола, сочетающая в себе свойства глагола и существительного.

Герундий имеет формы времени и залога.

Tense	Active	Passive
Indefinite	mixing (смешивающий, смешивая, смешивание)	being mixed (смешиваемый)
Perfect	having mixed (смешавший, смешав)	having been mixed (будучи смешанным)

Переводим:

1) существительным (иногда с предлогом);
2) инфинитивом;
3) придаточным предложением;
4) деепричастием.

Функции герундия в предложении.

1. Подлежащее: ***Learning rules without examples is useless.*** – Заучивать правила без примеров бесполезно.

2. Дополнение: ***His suit needs brushing.*** – Его костюм нуждается в чистке.

3. Часть сказуемого: ***Her hobby is driving.*** – Её хобби – вождение машины.

4. Определение: ***It's a new and interesting way of working.*** – Это новый и интересный способ работы.

5. Обстоятельство: ***After leaving her coat in hall she entered the room.*** – Оставив пальто в холле, она вошла в комнату.

Типы условных предложений

Тип	Придаточное предложение	Главное предложение	Перевод на русский язык
I Реальное условие. Относится к будущему времени.	**Present Simple** If the weather **is** clear,	**will+глагол** we **will go** for a walk	Если погода улучшится, мы пойдем на прогулку.
II Маловероятное условие. Относится к настоящему и будущему времени.	**Past Simple** If you **moved** to the country,	**would** **could + глагол** **might** you **would (could)** **buy** a bigger house.	Если бы вы переехали за город, вы бы могли купить большой дом.
III Нереальное условие. Относится к прошедшему времени. Выражает сожаление.	**Past Perfect** If he **had known** the facts,	**would** **could + have+VIII** **might** he **would have told** us what to do.	Если бы он знал эти факты, он бы сказал нам, что делать.

Примечания:

1. Придаточное предложение может вводиться союзами: *if, – если, in case – в случае, unless – если не* и др.
2. Во втором типе условных предложений глагол *to be* всегда имеет форму *were:*

If I *were* a millionaire, I would buy you a palace.

Запомните выражение:

If I were you/ in your position/ in your shoes. – На вашем бы месте…

КРАТКИЙ СЛОВАРЬ СОКРАЩЕНИЙ

ADC Analog-to-Digital Converter - аналого-цифровой преобразователь; АЦП

ADC Airborne Digital Computer - бортовой цифровой компьютер

ADC Analog Digital Calculator - автоматический цифровой калькулятор

AGP Accelerated Graphics Port - ускоренный графический порт

AGP Advanced Graphics Port - усовершенствованный графический порт

AI Action Indicator - индикатор действия

Active Impedance - активный импеданс

Adapter Interface - интерфейс адаптера

Address Incomplete - неполнота адреса

Analog Input - аналоговый вход

Analog Interface - аналоговый интерфейс

Application Interface - прикладной интерфейс

Articulation Index - показатель разборчивости

Artificial Intelligence - искусственный интеллект

Automated Instruction - программированное обучение

ADI Application Development Interface - интерфейс разработки приложений

ADFM Automatic Data Flow Management - автоматическое управление потоком данных

ADPC Automatic Data Processing Center - центр автоматической обработки данных

ADPS Automatic Dataq Processing System - система автоматической обработки данных

ADSL Asymmetrical Digital Subscriber Line - асимметричная цифровая абонентская линия

AHPL A Hardware Programming Language - язык программирования аппаратных средств

ALU Arithmetic Logic Unit - арифметико-логическое устройство АЛУ

API

Application Platform Interface - интерфейс прикладных базовых систем

Application Programming Interface - интерфейс прикладного программирования

Applied Program Interface - интерфейс прикладной программы

Automatic Priority Interrupt - автоматическое прерывание по приоритету

APL A Programming Language - язык программирования

APR Algorithm for Pattern Recognition - алгоритм распознавания образов

ASCII American Standard Code for Information Interchange - американский стандартный код для обмена информацией

ASCIIZ ASCII Zero - последовательность ASCII символов, заканчивающаяся нулевым байтом (00H, символ ASCII NUL)

ASM ASseMbler - файл на языке Ассемблер

AT Advanced Technology - прогрессивная технология

ATA

Advanced Technology Attachment - усовершенствованная технология подсоединения (IDE-интерфейс для AT-компьютеров)

Automatic Tuner Activation - автоматическая активация тюнера

ATAPI Advanced Technology Attachment Packet Interface - усовершенствованный пакетный интерфейс подключения (IDE-интерфейс для периферийных устройств)

AutoCAD Auto Computer-Aided Design - автоматическое проектирование с помощью компьютера

AUTOEXEC AUTOmatic EXECuted - автоматически выполняемый

AVI

Audio-Video interface - аудио-видеоинтерфейс (фирмы MS)

Animation VIdeo - анимационный видеофайл

Audio Video Interleave - чередование видео и аудио (способ компрессии данных фирмы MS)

BASIC Beginner's All-purpose Symbolic Instruction Code - универсальный символический обучающий код для начинающих; Бейсик

BAT BATch - пакет; пакетный файл

BDD Binary Digital Data - двоичные цифровые данные

BEL

Bus Exchange Line – линия (сигнала) коммутации шины

Bus Exchange Logic - логика коммутации шины

BEP

Back-End Processor - пост-процессор

Bit Error Probability - вероятность появления ошибочного бита

BIT

BInary Digit - двоичная цифра, бит

Binary Information Transfer - передача двоичных данных

Built-In Test - встроенный контроль (тест)

BUF(BUFF) BUFfer(BUFFer) - буфер

CAP

Channel Access Protocol - протокол доступа к каналу

Computer-Aided Programming - автоматизированное проектирование с помощью компьютера

CCD

Cable Circuit Diagram - схема расположения кабелей

Complementary Coded Decimal - кодирование десятичных чисел с использованием дополняющих кодов

Computer-Controlled Display - дисплей с управлением от ЭВМ

Consumer Computing Device - бытовое вычислительное устройство

CDR Compact Disk Recorder - устройство для записи компакт-дисков

CD-R Compact Disk - Recordable - компакт-диск для однократной записи

CD-RW Compact Disk - Re-Writable - перезаписываемый компакт-диск

CD-ROM Compact Disc Read Only Memory - ПЗУ на компакт-диске

CES Consumer Electronics Show - выставка потребительской электроники

CGI

Common Gateway Interface - общий шлюзовый интерфейс

Computer Graphics Interface - интерфейс компьютерной графики

CODEC COder-DECoder - кодер-декодер; кодек

CODEC COmpressor-DECompressor - компрессор-декомпрессор (алгоритм сжатия данных)

COINS COmputer and INformation Science - теория информационных и вычислительных систем

COM

COMmand - команда; командный файл

Common Object Model - общая модель объекта

COMmunication - связь; последовательный порт

COMmutator - коммутатор

Component Object Model - модель составных объектов

CRC Cyclic Redudancy Check - контроль циклическим избыточным кодом

CRT

Cathode-Ray Tube - электронно-лучевая трубка, ЭЛТ

Choice Reaction Time - время принятия решения

Clock Rate Test - проверка по тактовой частоте

CSS Cascading Style Sheets - каскадируемые таблицы стилей

DAC Digital-to-Analog Converter - цифроаналоговый преобразователь

DAEMON Data Adaptive Evaluator and MONitor - адаптивное устройство оценки и отображения данных

DHTML Dynamic HyperText Make-Up Language - динамический язык создания гипертекста

DDL Dynamic Data Library - динамическая библиотека данных

DDR

Dial-on Demand Routing - маршрутизация установленного по требованию соединения

Digital Data Receiver - приемник цифровых данных

Digital Demand Recorder - цифровое устройство регистрации запросов

Direct Disk Recorder - устройство прямой записи на диск

Dynamic Device Reconfiguration - динамическая реконфигурация устройств

DLL Dynamic Link Library - динамически подключаемая библиотека

DMA

Data Management Analysis - анализ управления данными

Deferred Maintenance Alarm - несрочный тревожный сигнал технической эксплуатации

Direct Memory Access - прямой доступ к памяти

Direct Memory Address - прямой адрес памяти

DSL Digital Subscriber Line - цифровая абонентская линия

DVI

Digital Video Interactive - интерактивное цифровое видео (стандарт)

Digital Video Interface - цифровой видеоинтерфейс

DV Digital Video - цифровое видео

DVD

Digital Versatile Disk - цифровой универсальный диск

Digital Video Disk - цифровой видеодиск

DWORD Double WORD - двойное слово

EBCD Extended Binary-Coded Decimal - расширенный двоично-кодированный десятичный код

EDB

Evolvable DataBase - расширяемая база данных

Existing DataBase - существующая база данных

External DataBase - внешняя база данных

EDCC Error Detection and Correction Code - код с обнаружением и исправлением ошибок

EXE EXEcute - выполнить; исполняемый файл

EXEC EXECute - исполнять; исполнительный

FDD Floppy Disk Drive - дисковод для гибких дисков

FIFO First-in, First-out - «Первым пришел, первым вышел» (очередь)

FTP File Transfer Protocol - протокол пересылки файлов

GUE Graphical User Environment - графическая среда пользователя

GUI Graphical User Interface - графический интерфейс пользователя

GUID Globally Unique IDentifier - глобально уникальный идентификатор

HD High Definition - высокое разрешение

HDD Hard Disk Drive - дисковод для жестких дисков, накопитель на жестком диске

HEX HEXadecimal - шестнадцатиричный

HMI

Human-Machine Interaction - взаимодействие человека и машины

Hub Management Interface - интерфейс управления концентратором

HTM HyperText Mark-up language

HTML - язык разметки гипертекста

HyperText Make-up Language - язык создания гипертекста

HyperText Mark-up Language - язык разметки гипертекста

HTTP

HyperText Transfer Protocol - протокол передачи гипертекста

HyperText TransportProtocol - транспортный протокол (передачи) гипертекста

ICA InterComputer Adapter - межкомпьютерный адаптер

ICQ «I seek you» - «я ищу тебя» (программа общения через сеть)

IDE

Integrated Drive Electronics - интегрированная электроника дисковода {встроенный контроллер)

Intelligent Device Electronics - интеллектуальная электроника устройства {интерфейс IDE)

Intelligent Drive Equipment - интеллектуальное оборудование дисковода (интерфейс IDE)

IMAP

Interactive Mail Access Protocol - протокол интерактивного доступа к электронной почте

Internet Message Access Protocol - протокол доступа к (почтовым) сообщениям в сети Internet

IP

Internet Protocol - межсетевой протокол

Internetwork Protocol - межсетевой протокол

Interrupt Priority - приоритет прерывания

Item Processing - поэлементная обработка данных

IRQ Interrupt ReQuest - запрос прерывания

IS Information System - информационная система

ISA

Industry Standard Architecture - промышленная стандартная архитектура (8/16-разрядная системная шина)

Information Services Association - Ассоциация информационных служб (Великобритания)

Instrument Society of America - Американское общество приборостроителей

International Standard Association - Международная ассоциация по стандартизации

Interrupt Storage Area - область хранения прерываний

Invalid Storage Address - недействительный адрес ЗУ

ISDN Integrated Services Digital Network - цифровая сеть с интегрированными (комплексными) услугами

IT Information Technology - информационная технология

JPEC Joint Photography Experts Committee - Объединенный комитет экспертов по машинной обработке фотоизображений

JPEG Joint Photographic Experts Group - Объединенная группа экспертов-фотографов; алгоритм сжатия неподвижного изображения

JPG Joint Photographic experts Group - Объединенная группа экспертов-фотографов; файл, сжатый по алгоритму JPEG

JVM Java Virtual Machine - виртуальная машина Java-программ

KILL KILLer - подавитель; выключатель

KISS Keep It Simple, Stupid - «будь проще, дурачок» (принцип, запрещающий использование более сложных средств, чем необходимо)

KM Kernel Mode - режим ядра

LAN Local Area Network - локальная (вычислительная) сеть; ЛВС

LCD Liquid Crystal Display - жидкокристаллический дисплей

LED Light-Emitting Diode - светодиод

LIFO Last-In, First-Out - «последним пришел, первым ушел» (принцип работы стека)

LPT Line PrinTer - строчной принтер, параллельный порт для принтера

LZ Lempel-Ziv - Лемпель-Зив (алгоритм сжатия данных, названный именами авторов)

LZW Lempel-Ziv-Welch - Лемпель--Зив-Уэлч (алгоритм сжатия данных, названный именами авторов)

MATLAB MATrix LABoratory - матричная лаборатория (программное средство)

MB

Mother Board - «материнская» плата (ПЭВМ)

Memory Buffer - буфер ЗУ

MBR Master Boot Record - главная загрузочная запись (загрузочный сектор жесткого диска)

MMX

Matrix Multiplication eXtensions - расширения для умножения матриц

MultiMedia eXtensions - расширения для мультимедиа (в архитектуре процессора)

MS MicroSoft

MSDN MicroSoft Developer Network - сеть разработчиков Microsoft (серия CD-ROM фирмы MS для разработчиков сетевого программного обеспечения)

MSDOS MicroSoft Disk Operating System - ДОС фирмы MS

MS-DOS MicroSoft Disk Operating System - ДОС фирмы MS

MS DOS MicroSoft Disk Operating System - ДОС фирмы MS

MSN MicroSoft Network - сеть фирмы MS

NT Network Terminator - сетевой терминатор

NT New Technology - новая технология (операционная система Windows NT)

NTDS New Technology Directory Service - служба каталогов Windows NT

NTFS New Technology File System - файловая система Windows NT

NVRAM Nonvolatile RAM - энергонезависимое ОЗУ

NVROM Nonvolatile ROM - энергонезависимое ПЗУ

NVT Network Virtual Terminal - сетевой виртуальный терминал

OCR Optical Character Reader - устройство оптического считывания знаков

Optical Characters Recognition - оптическое распознавание символов

OCR-A Optical Characters Recognition — font A - стандартный шрифт A для оптического считывания знаков

OCR-B Optical Characters Recognition — font B - стандартный шрифт B для оптического считывания знаков

OCX OLE Custom extensions - пользовательские расширения протокола OLE

ODBC Open DataBase Connectivity - открытая связь с базами данных

OLE Object Linking and Embedding - связывание и внедрение объекта

OO Object-Oriented - объектно-ориентированный

OODB Object-Oriented DataBase - объектно-ориентированная база данных

PCI

Peripheral Command Indicator - индикатор команд обращения к внешним устройствам

Peripheral Component Interconnect - межсоединение периферийных компонентов {системная шина РСГ)

Priority Chain Input - приоритетный последовательный ввод

Protocol Control Indicator - идентификатор управления протокола

Protocol Control Information - протокольная управляющая информация

PCMCIA Personal Computer Memory Card International Association - Международная ассоциация производителей плат памяти для ПК; стандарт PCMCIA на средства расширения портативных ПК

PnP Plug and Play - «Подсоединяй и работай”

PNG Portable Network Graphic - переносимая сетевая графика

POP Post Office Protocol - протокол почтового отделения

RAID

Redundant Array of Inependent Disks - избыточный массив независимых дисков

Redundant Array of Inexpensive Disks - избыточный массив дисков

RAM

Random-Access Memory - память с произвольным доступом

Real-Address Mode - режим реальной адресации

Resident Access Method - резидентный метод доступа

RAMDAC Random-Access Memory Digital-to-Analog Converter - цифроаналоговый преобразователь с использованием памяти с произвольным доступом

RAT

Receiver And Transmitter - приемник и передатчик

Register Alias Table - таблица псевдонимов регистров

Remote-Access Terminal - терминал дистанционного доступа

RGB Red-Green-Blue - красный-зеленый-синий

RMC ReMote Control - дистанционное управление

SDIF Sony Digital InterFace - цифровой интерфейс фирмы Sony

SDRAM Synchronous DRAM - синхронное динамическое ОЗУ

TCP

Terminal Control Program - программа управления терминалом

Transmission Control Protocol - протокол управления передачей

TCP/IP Transmission Control Protocol /Internet Protocol - протокол управления передачей / межсетевой протокол

TFT

Thin-Film Technology - тонкопленочная технология

Thin-Film Transistor - тонкопленочный транзистор

TMP TeMPorary - временный (файл)

TWAIN - спецификация интерфейса для сканеров

UDMA Ultra Direct Memory Access - сверхскоростной прямой доступ к памяти (протокол обмена UltraDMA для жестких дисков)

USB Universal Serial Bus - универсальная последовательная шина

VGA

Video Gate Array - видеовентильная матрица

Video Graphics Adapter - видеографический адаптер

Video Graphics Array - видеографическая матрица

WYSIWYG What You See Is What You Get - (режим полного соответствия при печати)

XGA

eXtended Graphics Adapter - расширенный графический адаптер

eXtended Graphics Array - расширенная графическая плата

XML eXtensible Markup Language - расширяемый язык разметки

XMS eXtended Memory Specification - спецификация памяти

СПИСОК МЕР ИЗМЕРЕНИЙ

.C*Ac, ac* [alternating current] – переменный ток

.D*ATP* ase [adenosinetriphosphatase] – аденозинтрифосфорная кислота (АТФ)

.E*ADP* ase [adenosinediphosphatase] – аденозиндифосфорная кислота (АДФ)

.F*C* [centigrade] - по стоградусной шкале (*о температуре*)

cm [centimeter] - сантиметр

deg. [degree] - градус

eg. [exemple gratia] – *лат.* например

ect. [et cetera] – *лат.* и другие

ft [foot] – фут, feet - футы

g [gram] - грамм

h, hr [hour] - час

i.e. [id est] – *лат.* то есть

lb [pound] – фунт (0,454 кг)

oz [ounce] – унция (28,349 кг)

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